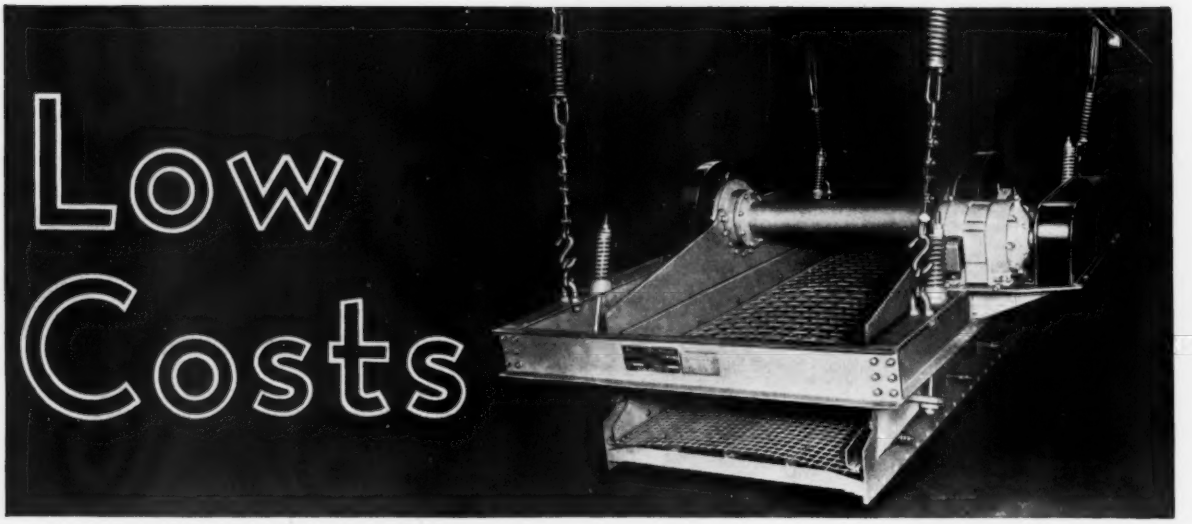
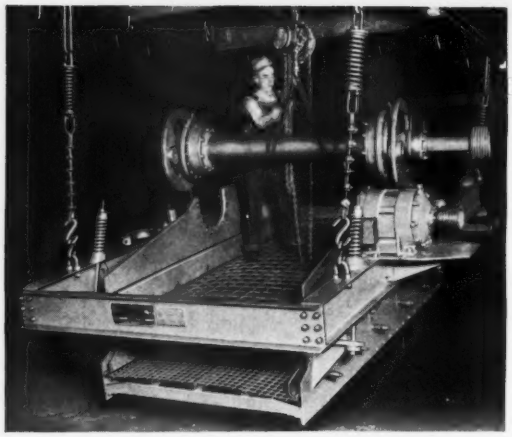
The MINING CONGRESS JOURNAL

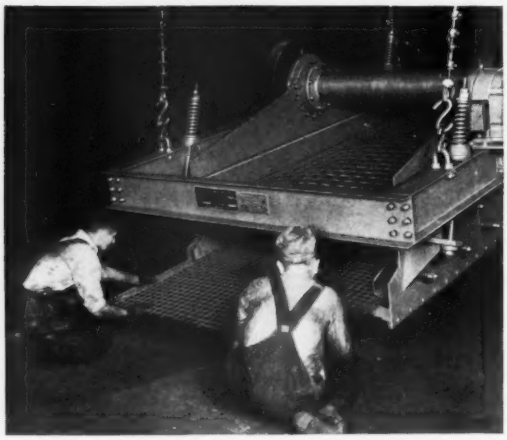
COAL CONVENTION & EXPOSITION NUMBER

MAY ■ 1933





Driving Mechanism is convenient for inspection and is easily removed or replaced



Screen Sections are easily and quickly changed. Liberal clearance between decks facilitates spouting

With New Style B Vibrating Screens

Style B screens are of heavy construction with positive eccentric motion. They are especially suitable for heavy loads and are built in a large range of sizes. . . . The driving mechanism is above the screen convenient for inspection and lubrication. It can be easily removed or replaced. The screen body floats on balance springs reducing power requirements and the load on the bearings. The liberal clearance between decks facilitates spouting, inspection of cloth and changing of screen sections. Screen cloth is held in tension and is reversible. All bearings are of the anti-friction type enclosed in dust-proof housings. All revolving parts are enclosed, protecting workmen and reducing installation expense necessary to meet safety laws. Mechanisms can be rotated in either direction. Screen motor and drive, all built by Allis-Chalmers, are tested as a unit at the factory before shipment. . . . The above features result in a screen of high capacity, uniform product, and low power and maintenance costs.

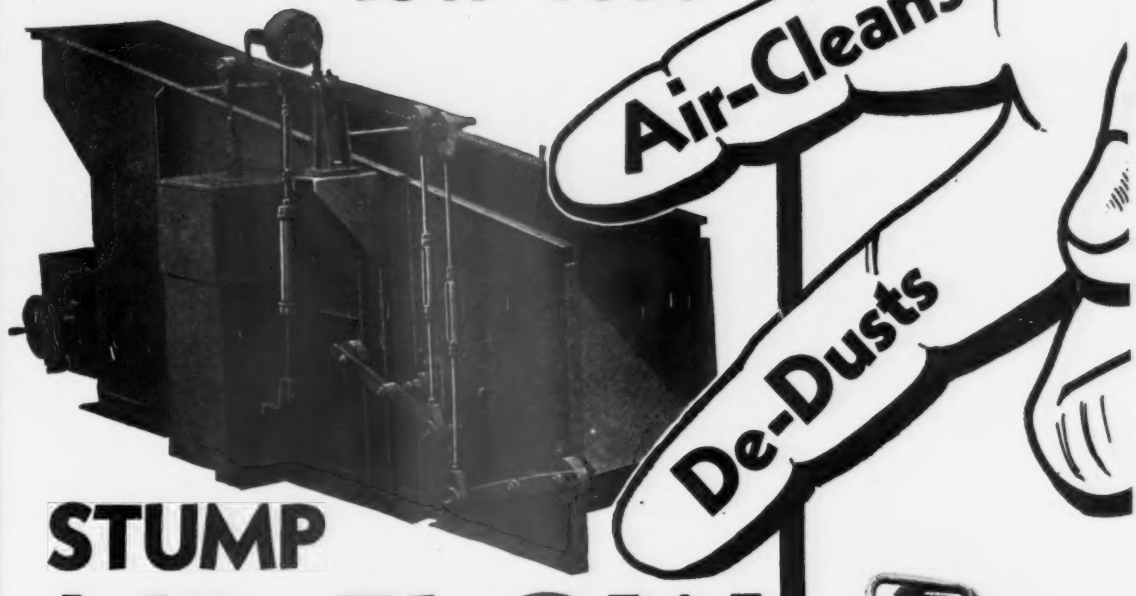
OTHER ALLIS-CHALMERS PRODUCTS

Gyratory Crushers
McCully and Newhouse
Non-Choking Concaves
Jaw and Roll Crushers
Revolving Screens
Vibrating Screens
Scrubbers and Washers
Elevators and Conveyors
Feeders and Bin Gates
Friction and Electric Hoists
Grinding Machinery
Cement Mill Machinery
Mining Machinery
Electric Motors
Gearmotor Units
Texrope V-Belt Drives
Centrifugal Pumps
Air Compressors
Track-type Tractors
Road Machinery
Track-type Wagons
Tunnel Shovels

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

Does 2 jobs at low cost



STUMP AIR-FLOW

IN addition to cleaning fine sizes of coal economically, Stump AIR-Flow Coal Cleaners, when fitted with our improved hood and collector, serve as efficient De-Dusters. Cleaning and De-Dusting are performed by air alone, without mechanical shaking action, and may be carried on simultaneously or separately as the product requires. Stump AIR-FLOW does both jobs well—at low cost.
They may be installed in existing tipples as part of complete air-cleaning plants, or in combination with one of our wet washing systems, using water process on nut to egg sizes and AIR-FLOW on slack.

AIR-FLOW also makes profitable the recovery of coal from crushed pickings off the picking tables.

Simplicity of construction, small size in relation to capacity, and low air consumption make AIR-FLOW Cleaners especially suited to any 3″XO preparation program you may contemplate at this time. We will be pleased to give complete demonstrations at our Harvey, Illinois, Testing Plant. Get in touch with our District Contracting Engineers for details.

WRITE for Bulletin Number 144

ROBERTS AND SCHAEFER CO.

ENGINEERS *and* CONTRACTORS
Wrigley Bldg., Chicago

418 OLIVER BLDG. PITTSBURGH, PA. • **1018 South Pearl St. DENVER, COLO.** • **514 NINTH AVE. HUNTINGTON, W. VA.**

THE Barnes Coal Company, Bakerton, Pennsylvania, operate a complete Stump AIR-FLOW cleaning plant designed for 360 tons of cleaned coal per hour. Their records show that the plant is exceeding its planned capacity, turning out **clean coal** and fully justifying our claims of AIR-FLOW economy. Write for more detailed report.

Be Sure to See
STUMP AIR-FLOW Coal Cleaner & De-Duster
RandS RO-Sieve Screens
at BOOTH No. 200
National Exposition of Coal Mine Equipment, Pittsburgh, Pa., May 8 to 12, 1933

The Primer cartridge

center-punched and safety-tied

FIG. 1

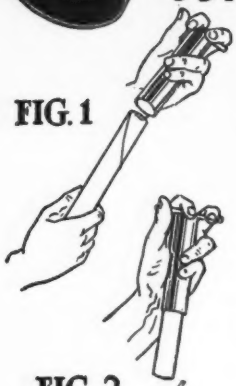


FIG. 2

Place the detonating cap in the CENTER of the primer cartridge, with the business end toward the main explosive charge. Advantages: (1) a more powerful detonation of explosive; (2) no contact with walls of bore holes danger of accidental discharge is minimized.

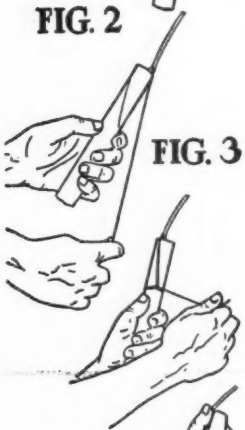


FIG. 3

Pierce this center hole accurately and quickly with an Ensign-Bickford Cartridge Center Punch (Figs. 1 and 2). Tie securely, using a 2-ft. length of unfinished tarred twine as shown in Figs. 3, 4 and 5.

FIG. 4

With this type of tie-up, the primer cartridge can be pushed gently into a ragged hole and held firmly against the end of the tamping bar by means of the fuse. At the same time this method avoids kinking of the fuse in the bore hole.

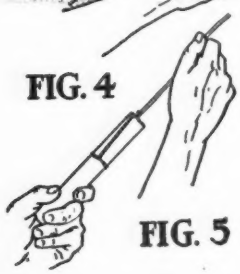


FIG. 5

The Ensign-Bickford Cartridge Center Punch is one of several new Blasting Accessories described in a bulletin which will be sent on request. The Ensign-Bickford Company, Simsbury, Conn.

ENSIGN-BICKFORD SAFETY FUSE

and Accessories

THE MINING CONGRESS JOURNAL

VOLUME 19 NUMBER 5 — MAY 1933

	Page
World Obligations and World Trade	15
EDITORIALS	16
MINING EVENTS	17
LEGISLATION	23
The Tenth Annual Coal Convention and Exposition	26
MODERN MINING PRACTICE	36
A "New Deal" in Coal Drying *by J. F. Mitchell*	36
ASSOCIATION ACTIVITIES	40
HAVE YOU HEARD?	41
PERSONALS	42
MODERN MINING EQUIPMENT	43

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Published every month by The American Mining Congress, Washington, D. C. Edited under the supervision of James F. Callbreath, Secretary of The American Mining Congress.

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Entered as Second Class Mail Matter January 30, 1915, at the Post Office at Washington, D. C. Published 12 times annually—the first of each month. Yearly subscription, United States and Canada, $3.00; Foreign, $4.00; single copies, $0.30.

Insure lowest Wire Rope cost

with ROEBLING
BLUE CENTER
The Finest Wire Rope Money can buy
1 STRONGER
Wire of highest strength consistent with ductility and toughness
2 TOUGHER
Provides maximum resistance against wear, sudden shocks, vibration
3 SAFER
Unequalled for uniformity of quality
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Insures lowest general average operating cost

PERFORMANCE records in endless number prove that Roebling "Blue Center" insures safe service at minimum cost. It is the highest grade of wire rope made.

The wire for "Blue Center" is drawn from special acid rope steel—custom-made by Roebling in small acid open-hearth furnaces—and is generally acknowledged to be the finest rope wire produced.

It is fabricated and tested in one of the country's largest, most modern wire rope plants—to the exactingly high standards which have prevailed at Roebling for over 90 years.

No wire rope, regardless of make or construction, will show lower general-average operating cost than Roebling "Blue Center".

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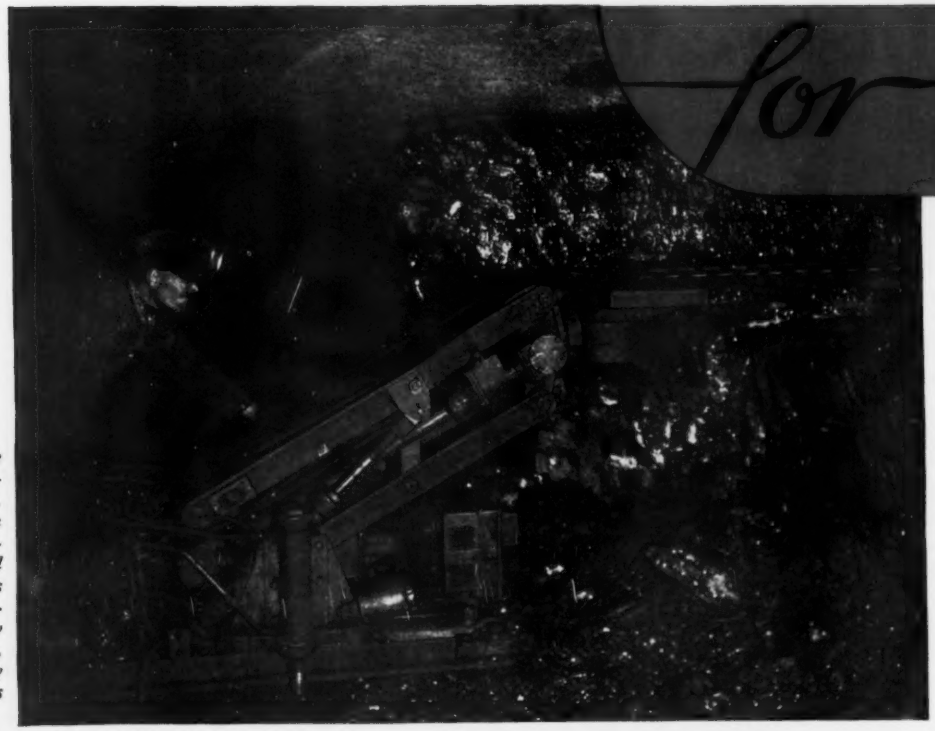
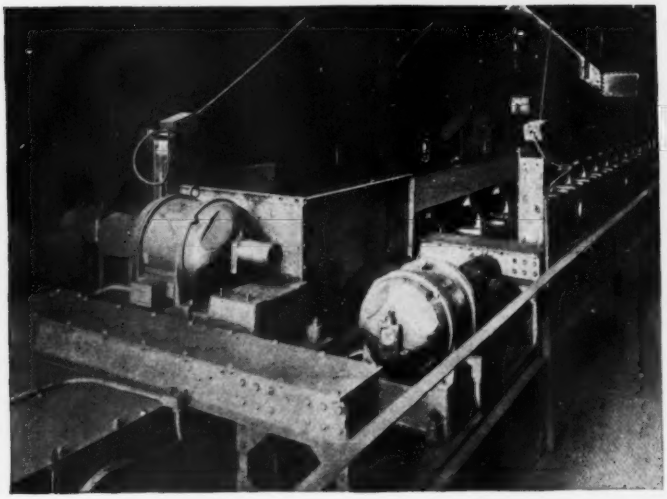
Roebling's complete line also includes Wire Rope in Plow Steel, Extra Strong Cast Steel, Cast Steel, Traction Steel and Iron Grades to meet individual requirements.

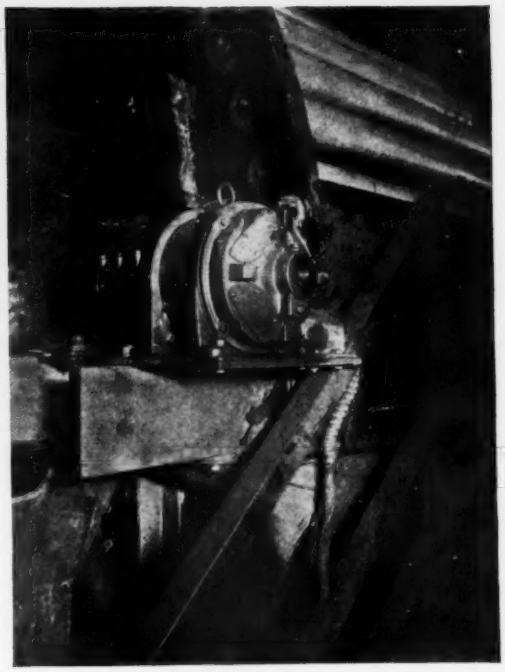
JOHN A. ROEBLING'S SONS COMPANY



Sawing coal from the face to produce larger lumps—and a bigger price per ton. Westinghouse has played a prominent part in the electrification of Joy Bros. Coal Saws. These new coal saws are equipped with the famous SK motor, the new Time-starter for positive, safe control, and the new "De-ion" Breaker for fuseless circuit protection.



No winding burnouts or hazards due to overheating with the new Westinghouse Thermoguard Motors. Whenever the temperature of these motors approaches the danger zone, they are either automatically cut off the line or a warning signal is given.



Half the space and lower maintenance for slow-speed drives are made possible by the Westinghouse Gearmotor. This one drives an oscillating filter in a wet process cleaning plant. These drives are also ideal for conveyors.

Cost Cutting Ideas

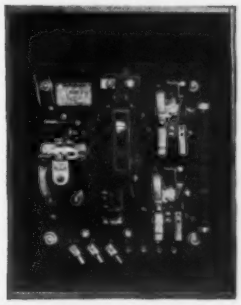
VISIT
the Westinghouse Exhibit
at Pittsburgh

DON'T fail to visit the Westinghouse Exhibit when you're at the American Mining Congress Convention in Pittsburgh. There you will find new electrical equipment of vital interest to every operator and engineer . . . new ideas for mining cost reduction.

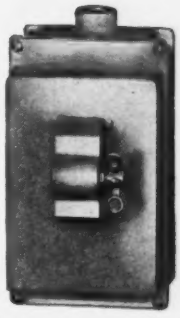
You will see displayed for the first time the new Thermoguard Motors for coal mines . . . underground and top works motors that are completely protected against excessive heating that results in winding burnouts and shortens motor life. These self-protecting motors assure minimum maintenance, minimum outage-time and minimum investment.

You will also be interested in the economies made possible by the Timestarter for underground machines . . . positive starting on partial voltage . . . low maintenance with the Cold-Arc Contactor . . . increased safety and fewer power interruptions. This starter will be in actual operation in our exhibit with a brake-loaded motor. Meters will show you its remarkable abilities.

In this year of extensive modernization, you can ill afford to miss the American Mining Congress Convention, and when you are in Pittsburgh, Westinghouse cordially invites you to its Exhibit Booths . . . and to its main offices and shops at East Pittsburgh. Westinghouse has new cost-cutting ideas to show you.



The Westinghouse Timestarter (cover removed) for underground machines assures positive motor starting regardless of low-voltage conditions. It automatically "sizes" overloads and treats them according to their intensity, assuring greater safety and increased tonnage.



For pumps, fans, conveyors, and top works machines, the new Westinghouse "De-ion" Circuit Breaker saves time and expense, replacing the usual fused switch. After an overload or "short," a mere flip of the breaker's handle restores service. No fuses to blow and no power interruptions from momentary "jams."

SEND FOR INFORMATION

Westinghouse Electric & Manufacturing Co.,
Room 2-N—East Pittsburgh, Pa.

Gentlemen: Please send me C. 1969, describing the new Thermoguard Motors for mining cost reduction.

Name .....

Company .....

Address .....T 79555

City.....*State*.....MCJ 5-33

Quality workmanship guarantees every Westinghouse product

PROPER CONTROL
is the Keystone of PROFITABLE MODERNIZATION

O-B WILL BE AT SPACES 208 and 210

MINING CONGRESS CONVENTION

ENCOURAGING, indeed, is the evidence of decreased costs and increased profits, which are resulting from the modernization plans of farsighted managements. Underlying this evidence are the stories of how effective and proper control of men and modern mechanical equipment have eliminated waste and increased the efficiency of mining operations. From such facts it seems evident that proper control is a keystone of profitable modernization.

For years the Ohio Brass Company has concentrated its efforts on the development of materials which will simplify the problem of electrical equipment control. Your visit to the O-B Booth at the coming Mining Congress Convention is apt to be more profitable than ever before. There you will have an opportunity to view the almost startling progress which has been made during the past year with O-B Safety and Control Devices, as well as with overhead and collection equipment. Take just a few minutes to observe how economically O-B products fit into present day modernization programs.

1606M

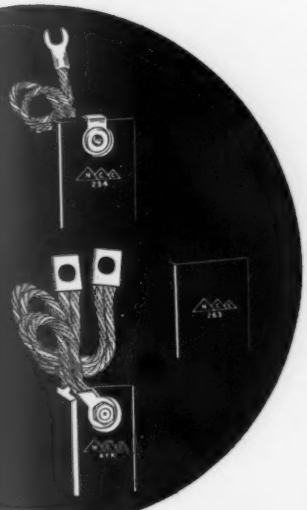
OHIO BRASS COMPANY

Mansfield, Ohio, U.S.A.

Canadian Ohio Brass Co. Limited, Niagara Falls, Ontario, Canada

New York · Philadelphia · Boston · Pittsburgh · Chicago · Cleveland · Atlanta · Dallas · Los Angeles · San Francisco · Seattle

The NEW DEAL in BRUSHES



Improved manufacturing facilities

•

Extensive program of research and development

•

Rigid inspection at every step of production

•

Data System Service—insuring correct brush application

•

A basis for efficient and economical operation.

• • SOME RESULTS OF THE NEW DEAL • •

Grade 234

Grade 234 combines excellent commutating characteristics with very low friction and a non-resilient structure which maintains contact with the commutator at high peripheral speeds. Ample carrying capacity enables this brush to withstand heavy surges and prolonged overloads.

Grade 234 successfully meets the exacting demands of heavy duty direct current generators, synchronous converters and heavy reversing mill drives.

Records of performance show substantial economies effected by the adoption of this brush. Annual saving in commutator maintenance as high as $400 per machine has been recorded and increase in brush life from 50 to 100 per cent.

Grade 263

Grade 263 is a new, heavy duty brush for D.C. or single phase A.C. traction motors. This grade is one of the important developments of 1932.

Freedom from chattering is an outstanding characteristic which practically eliminates brush chipping and breakage and greatly reduces side and hammer wear. High contact drop assures excellent commutation and prevents pitting of brushes or commutators on A.C. equipment.

Service records show exceptionally long life, negligible commutator wear and greatly reduced commutator maintenance. Grade 263 is recommended for all heavy duty traction service.

Grade AYK

Grade AYK is a copper-impregnated, graphitic brush especially adapted to slip rings of induction motors and railway type synchronous converters. Its firm structure affords exceptionally long life on slip ring applications at moderate current density.

This grade eliminates dusting and maintains a dark, well polished ring surface. It is particularly recommended for use in automatic railway substations which are on and off the line many times a day.

Records from both induction motor and synchronous converter applications indicate the superior performance of Grade AYK in its special field of service.

Install

NATIONAL PYRAMID BRUSHES

for improved performance in normal operation and relief from annoyance on troublesome equipment

NATIONAL CARBON COMPANY, INC.

Carbon Sales Division, Cleveland, Ohio

Unit of Union Carbide and Carbon Corporation

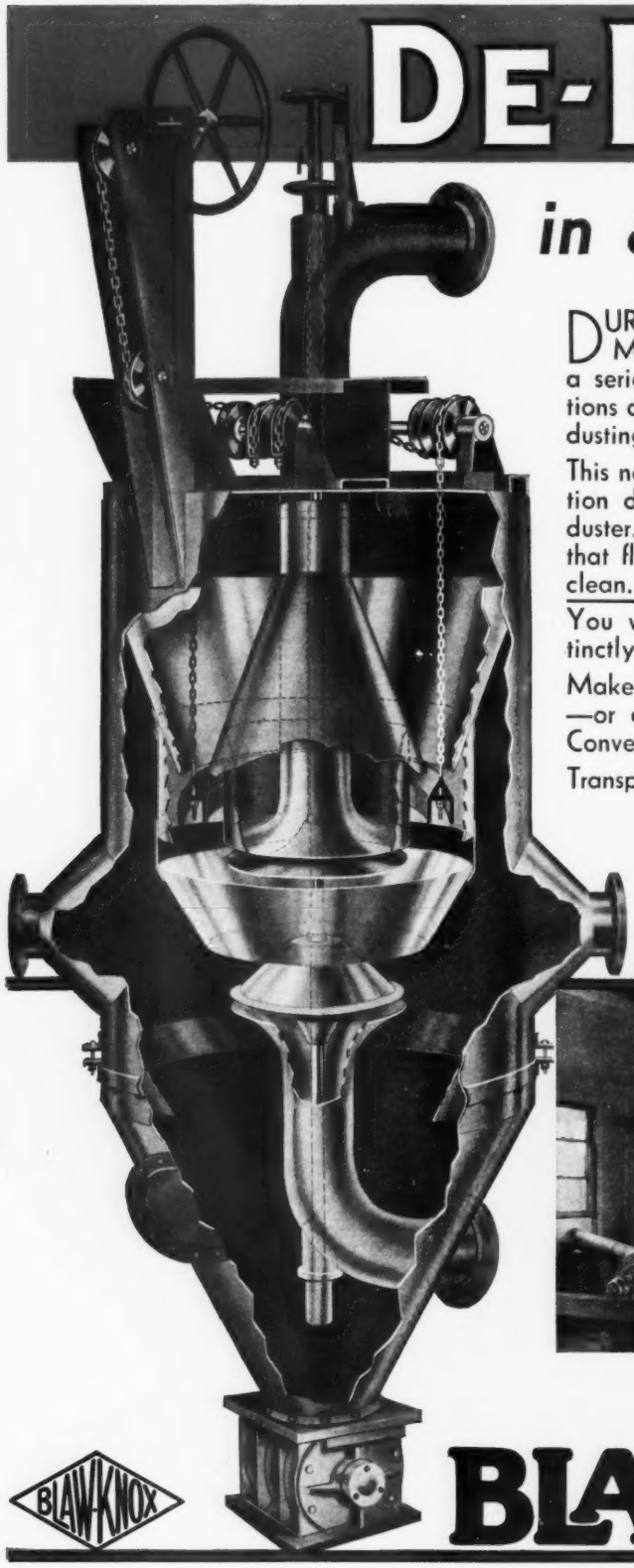
BRANCH SALES OFFICES: NEW YORK PITTSBURGH CHICAGO SAN FRANCISCO

When in Pittsburgh see the new Blaw-Knox

YOU ARE INVITED

DE-DUSTER

in actual operation



DURING the Coal Convention of the American Mining Congress at Pittsburgh, May 8th to 12th, a series of interesting coal de-dusting demonstrations and tests will be conducted for you in the De-dusting plant of the Blaw-Knox Company.

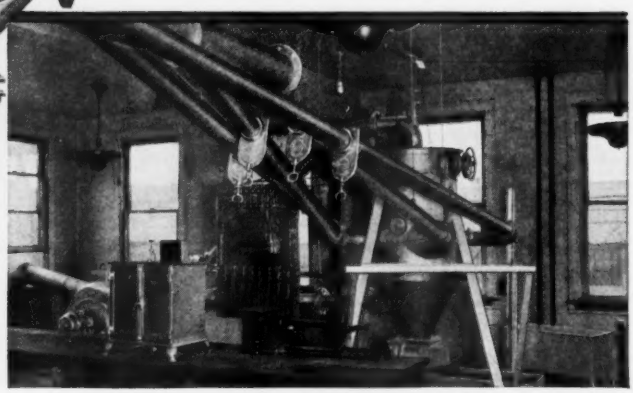
This new Blaw-Knox DE-DUSTER combines absorption drying with aspiration. It is a complete de-duster. It will de-dust moist coal, in fact—any coal that flows. It is a closed-circuit system, absolutely clean.

You will find these tests and demonstrations distinctly worth while—time well spent.

Make your appointment in advance if you care to —or at the Blaw-Knox Booth (No. 621) at the Convention.

Transportation facilities will be provided.

BLAW-KNOX COMPANY
2009 Farmer's Bank Building :: Pittsburgh, Pa.
Offices in Principal Cities



Samples of your coal will be de-dusted in this Blaw-Knox De-Dusting Plant. See the Blaw-Knox DE-DUSTER in actual operation.

BLAW-KNOX

BLAW-KNOX

Announcing

the

Goodman UNIVERSAL Shaker Drive

Type G-20—15 to 30 Hp.

Truly Universal

For each installation, a choice of three motions (each of different intensity), two lengths of stroke and two speeds may be had to suit your particular requirement. A different motion is required to transport properly

Dry Coal-Wet Coal-Lump Coal-Slack Coal

Upgrade—Level—Downgrade

The new UNIVERSAL Goodman can be made to suit ANY combination of these conditions. If your present conditions should change, YOU NEED NOT BUY A NEW DRIVE. The new UNIVERSAL Goodman may be adapted to the new condition simply interchanging three parts right at the mine.

Features:

Back-slip of Coal is Eliminated
Self-lubricating, Splash Feed
All Gears Run in Oil
Drives Efficiently with Duckbill
Large Skid Plate with Bar Lugs
Most Effective Motion
20,000 Pounds Pull

Case	Steel
Gears	Heat-treated Alloy Steel
Coupling Rods	Steel Forgings
Connecting Rod	Alloy Steel
Rocking Levers	Alloy Steel
Driving Levers	Alloy Steel

The G-15 UNIVERSAL Goodman Drive—15,000 Pounds Pull—is Coming! Ask About It!

GOODMAN MANUFACTURING COMPANY

HALSTED ST. at 48TH.
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Locomotives - Loaders - Coal Cutters

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(63)

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MINE SAFETY
PITTSBURGH, PA.
APPLIANCES CO.

PITTSBURGH...

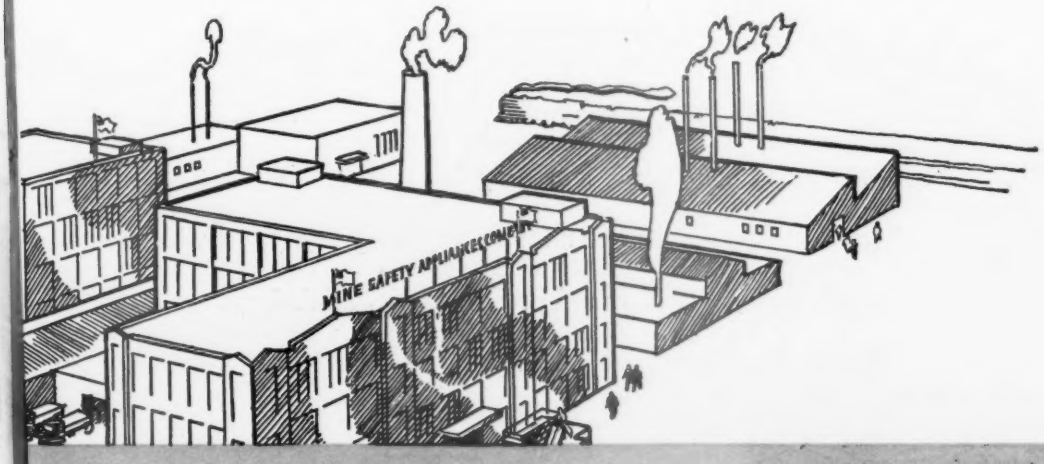
.. the home of

MINE SAFETY APPLIANCES

Mere words can hardly express the kind of hearty handshake and friendly greeting we would like to give you upon your arrival in Pittsburgh to attend the American Mining Congress at the William Penn Hotel. We hope your stay will be both enjoyable and profitable.

While here, we will esteem it a pleasure and privilege to have you visit our plant at Braddock Avenue and Thomas Boulevard. No stay in Pittsburgh by a coal mining executive is complete without visiting our large plant,—headquarters for every known type of approved safety appliance.

We will be expecting you



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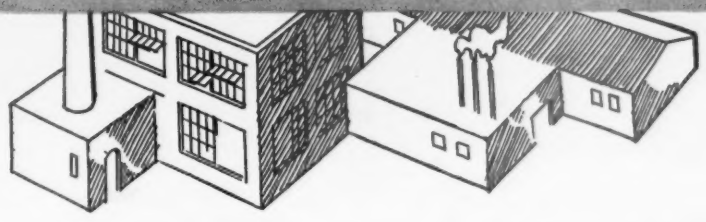
General Offices: Pittsburgh, Pa. - District Representatives in Principal Cities

M. S. A. EQUIPMENT—Edison Mine Cap Lamps . . . Skullgards . . . Goggles . . . Safety Shoes . . . Rock Dust Distributors . . . Oxygen Breathing Apparatus . . . Self Rescuers . . . All-Service Masks . . . Gas Indicators and Recorders . . . Safety Clothing . . . Inhalators . . . First Aid Equipment . . . Safety Signs . . . Miscellaneous Mining Specialties . . .Descriptive Bulletins will be sent on request.



For the Third Year

the Convention Spotlight is on

JOY BROTHERS

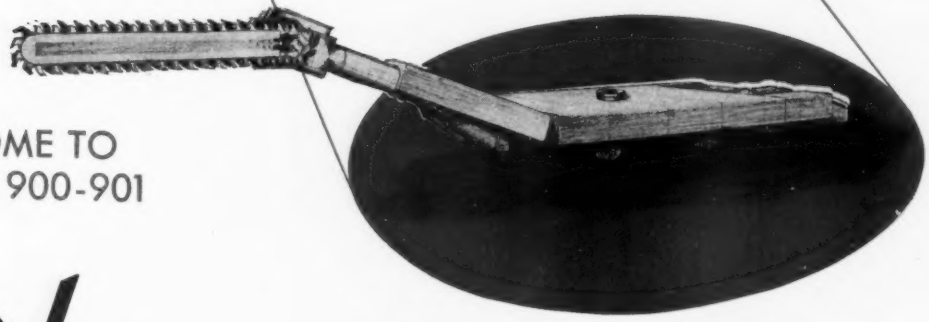
COAL SAWS

MAKE BOOTHS 900-901 YOUR CONVENTION HEADQUARTERS

See Our New

TYPE 6-A TRACK MOUNTED COAL SAW

Don't miss this opportunity to acquaint yourself with Coal Saws and the tremendous advantages to be gained from Joy Brothers Sawing System of Mining. There are now a number of mines completely equipped with Coal Saws and these mines, by increased profits, have definitely proven the soundness of the Sawing System of Mining.



WELCOME TO
BOOTHS 900-901

JOY Brothers, Inc.

MARION, OHIO, U. S. A.

World Obligations and World Trade

THE PRESENT DISCUSSIONS looking to adjustment of international debts are fraught with menace to the American taxpayer. Twice already, in the Versailles treaty and in the Young plan, have these obligations been revised and now we are called upon, as a nation, to again reconsider with a view to further reductions. It may be that our creditors need more time to meet these obligations which should be cheerfully granted, but to say that a nation will never be able to meet its responsibilities is a confession which should bring lasting disgrace. There is little distinction between public and private indebtedness. If a citizen desires to avoid his obligations because of his inability to pay, he takes the bankruptcy act. His assets are turned over to an assignee to be distributed among his creditors. The only difference between a private debtor and public debtor is that a government has the power at all times to take from its citizens, through the power of taxation, the amounts necessary to meet its obligations. The individual is not so favorably situated. Any government which fails to meet its just obligations has no right to lay claim to being honest, nor to hold a place in the sisterhood of self-respecting nations. Every cancellation of debts due to the United States from any foreign country is only a transfer of that obligation from the foreign nation to the backs of the already burdened taxpayer of our own country.

Has not the time arrived when the silly vaporings shall cease by those who insist that international debts shall be cancelled and trade barriers broken down as a basis of foreign trades? Trade everywhere depends upon efficiency of production. The foreign consumer, like our domestic consumer, will buy the cheaper goods where quality is the same. Business is based upon confidence. The defaulter is not entitled to confidence, whether the defaulter is a nation or an individual. You may charge off the account of a defaulting debtor but your confidence in him is absolutely destroyed and future business relations will be conducted under suspicion.

Beginning with the monumental falsehood that Belgium and France were responsible for the World War; the sale of marks to the world and their later repudiation; the continued declaration that Germany was unable to pay while at the same time she was spending billions in public improvements; and the continued propaganda of international bankers that international obligations should be cancelled, apparently for the purpose of giving to their foolish second loans a position of priority—this vicious propaganda of dishonesty has absorbed the peoples of the world, many of whom now insist that their debts shall be cancelled. If the universal repudiation of debts is approved, then world confidence has been destroyed and many generations necessarily will be required to develop the principle of integrity in business transactions, without which business must and will be severely restricted.

Trade does not follow the flag. Trade follows efficiency and the flag follows trade. To debauch our own workmen by breaking down the tariff walls which permit high wages, or to trade away the nation's wealth in order that we may be permitted to do business in foreign countries, is paying too high a price for the privilege of trading with nations ready to default or debtors trying to repudiate.

The
MINING CONGRESS JOURNAL

VOLUME 19
NUMBER 5

MAY
1933

A Journal for the entire mining industry published by The American Mining Congress

COAL LEGISLATION

AGAIN WE ARE being threatened with national coal legislation, but this time the threat seems to be assuming the nature of a definite promise. At least, the proponents of legislation are making a more intensive effort than they have ever made in the past.

The purpose of the proposed law is said to be regulation and allotment of production. There is not so much in this to quarrel with as a theory—certainly the majority of the coal industry recognizes the desirability, if not the necessity, of adjusting production between mines and districts by some other method than the insane competition which has lowered wages and prices to their present destructive levels. In fact, the industry itself has made repeated efforts for many years to unite in correcting this evil, but it has only been within the last month that a decision of the Supreme Court has permitted this attempt to be made. National legislation will tend to nullify this constructive step which has already been taken. The law as proposed may be able to allocate production and stabilize wage rates and prices, but it will also eliminate legitimate competition and will spread the tonnage over so many mines that the operators and their employes will not have sufficient work to prosper—even at the increased wage rates and prices.

One of the greatest causes for the lack of prosperity in normal times in coal mining is the potential overproduction. Too many mines for the coal consumed. The natural law has been working to correct this and in the last ten years the number of mines operating have decreased from more than 9,000 to less than 6,000. Had it not been for the general business depression which has reduced the normal tonnage of coal, the discontinuance of more than 3,000 mines would by this time have had some beneficial effect.

The first act of the threatened legislation will be to put these 3,000 mines back into operation, as under the proposed law the allocated tonnage for each mine will be based on its maximum production in any year since 1919. This, of course, assures tonnage for those who could not in the past compete on an equal basis with other mines in their districts. Organized labor has actively sponsored the bill because it will compel unionization of every coal producing mine. Organized labor has not explained how this bill will provide sufficient work for the miners now employed, to say nothing of how the present situation will be helped by encouraging more mines to reopen. Neither have the politicians.

THE THIRTY-HOUR WEEK

THE HOUSE LABOR COMMITTEE is conducting public hearings upon the proposed legislation to regulate industry in production, in hours of work and in wages paid, through sweeping governmental powers. The bills sponsored by Senator Black and Congressman Connery, and rewritten and endorsed by Secretary of Labor Frances Perkins, are probably the most revolutionary pieces of legislation ever seriously proposed in the United States Congress.

There is every evidence that our present administration and the Congress are determined to provide, no matter at what cost, employment for the 13 million unemployed. No one can quarrel with that determination. Proposals for so-called "social legislation" are inevitable in such periods of stress. But the proposals should be carefully scrutinized and, if adopted at all, made certain that they actually do what is proposed and not just the opposite.

There has been, and will continue to be, much debate upon the question of the helpfulness of the compulsory establishment of the 30-hour week. The first point raised against the proposal is that it is unconstitutional; the second that, if enacted, it will actually decrease, rather than increase, employment. In many industries workers are employed by the hour. In that case, earnings would merely be decreased and the bill would merely limit hours of work.

But the bill goes farther—much farther. It proposes a minimum wage and sets up an "Hours of Work Court" which would virtually control all production. Possibly, if the bill shall also include a minimum sales price (and guarantee it), industry will be more favorably inclined to the proposal. The mining industry has registered decided opposition to the bill as now constituted. It gives as its reasons (1) that the 6-hour shift will disorganize the spread of work movement; (2) that the Hours of Work Courts will but further enmesh the industry in governmental red-tape; (3) that a minimum wage, arbitrarily fixed, is too inflexible; (4) that many industries are already operating under wage agreements that may be thrown in the discard to the greater detriment of harrassed industry; and (5) that the whole proposal is an unwarranted intrusion of the government into private business.

Whatever the outcome, it is to be hoped that before any such drastic legislation shall become a law Congress and the administration will give the subject the intensive study it should have from all angles.

PITTSBURGH MAY 8 TO 12

THE PROGRAM for the Tenth Annual Convention of the Coal Division of The American Mining Congress offers the maximum to the coal industry. It presents one of the finest aggregations of papers dealing with practical operating problems that has ever been presented for the industry. Major topics include discussions on problems of management; mining methods; cleaning, blasting; power; mechanical mining; haulage; safety; and research. No matter in what phase of operation an operator is interested, there is something on the program for him.

These meetings have proved highly instructive and helpful; it is generally conceded that they have contributed more to the advancement of coal production methods than any other agency.

Combined with the National Exposition of Mining Equipment, the meeting offers an unbeatable combination. Put the dates down . . . May 8-12 . . . and make it a point to be there.

MINING EVENTS

Anthracite

THE CONFERENCES between representatives of the United Mine Workers of America and the anthracite producers, looking to a lowering of the existing wage scales, is still under way. Final steps toward reaching a goal fixed by the producers for a reduction of $3 a ton to meet competition of oil and gas and other competing fuels are said to be definitely under way. Those negotiating the agreement are: For the operators—Maj. W. W. Inglis, president of the Glen Alden Coal Company (chairman); A. J. Maloney, Philadelphia & Reading C. & I. Company; Michael Gallagher, the Pittston Company; Richard F. Grant, Lehigh Valley Coal Corp.; E. H. Suender, Madeira-Hill Coal Company; and J. B. Warriner, Lehigh Navigation Coal Company. For the miners—John L. Lewis, president; Phillip J. Murray, vice president; Thomas L. Kennedy, secretary, all of the United Mine Workers of America; and John Boylan, Michael Hartneady, and Martin Brennan, district presidents.

GEN. BRICE P. DISQUE, president of the Anthracite Institute, recently announced that anthracite producing companies with a total present production of approximately 8,000,000 tons joined forces with the Anthracite Institute at a meeting held at its offices, 19 Rector Street. This new tonnage represents nearly 15 percent of the total production of anthracite and, combined with that of the producing companies already members of the Institute, unites about 83 percent of the industry. Those joining were: Susquehanna Collieries Company, Penn Anthracite Mining Company, Madeira, Hill & Company, Weston Dodson & Company, Wyoming Valley Collieries Company, East Bear Ridge Colliery Company, Lytle Coal Company.

THROUGH JANUARY, the influx of foreign anthracite continued and totaled 51,488 net tons up to January 28. The United Kingdom and Russia, through the benefits of currency depreciation, shipped the bulk of the anthracite. January shipments took away from American labor 25,000 man-work days.

In the week ended February 4, 1933, 19,121 net tons of anthracite were received into the port of Boston, according to a report of the Bureau of Foreign and Domestic Commerce to the Anthracite Institute. Of this shipment Russia supplied 6,664 tons; Germany 1,986 tons, and Great Britain 10,471 tons.

American exports in 1932 declined to a total of 1,303,355 net tons, as compared with 1,778,000 tons in 1931, 2,552,000 tons in 1930, and 3,406,000 tons in 1929. Exports to Canada in 1932 amounted to 1,301,440 net tons against 1,769,000 tons in 1931.

It is significant that while American exports to Canada declined, Canadian imports of British coal reached a new peak in 1932, when they totaled 1,335,000 tons for that period. This compared with 706,000 tons in 1931.

The decline of 35 percent to 45 percent in the exportation of American anthracite to Canada in 1932, as compared with the preceding year, is attributed to the discount on Canadian currency and to considerable importations of British, especially Welsh, coal, according to advices from Hamilton, Ontario, received at the Anthracite Institute. Purchases of British coal were also believed to have been increased by the "Buy British" campaign.—*Black Diamond.*

IMPORTS OF ANTHRACITE in 1932 amounted to 609,297 net tons, according to a preliminary report received by the Anthracite Institute from the Bureau of Foreign and Domestic Commerce. This compares with 637,951 tons in the preceding year and 676,669 tons in 1930.

When it is considered that for every 600 tons imported, one Pennsylvania miner is thrown out of work for a year and for every 3,000 tons, one railroad man becomes idle for 12 months, the 1932 imported tonnage of anthracite is found directly responsible for the unemployment of more than 1,000 American miners in the anthracite industry and more than 200 railroad men.

In terms of day labor, imported anthracite last year took away from American mining and railroad men 300,000 man-work days. These imports were divided as follows: 281,928 tons from the United Kingdom; 231,958 tons from Russia; 62,629 tons from Germany; 23,051 from Belgium, and 7,731 tons from French-Indo-China.

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Bituminous

THE MOST INTERESTING feature of the bituminous coal industry this month is the rapid growth of the selling agency plan since the approval of Appalachian Coals, Inc., by the United States Supreme Court. Appalachian Coals is already functioning. Northern Ohio is perfecting its plan; central Pennsylvania is organizing, and conferences are being held among the western Pennsylvania operators looking to the same end. J. D. Francis, vice president, Island Creek Coal Company, is president of Appalachian Coals, Inc., whose membership now includes 137 companies, said to produce 75 percent of the high volatile coal in the southern fields. The announced "first duty" of the organization is to "adjust its affairs so that men employed at the mines may have regular schedules of employment." Howard N. Eavenson, nationally known consulting engineer of Pittsburgh, and president of Clover Splint Coal Company, is a leading factor in the perfection of the idea, and serves as chairman of the board of directors.

Coal has also maintained national attention in a legislative way. The Hayden-Lewis bill has been rewritten and is receiving the endorsement of organized labor. Operators from the southern fields through the National Coal Association met with Secretary of the Interior Ickes for a discussion of this proposed legislation. It is understood that the Illinois operators are arranging a similar conference.

Western Pennsylvania operators as represented in the Central Pennsylvania Operator's Association are considering whether they will join in a selling agency corporation on the plan of Appalachian Coals, Inc. Charles O'Neil, vice president, Peale, Peacock & Kerr, Inc.; J. W. Searles, president, Pennsylvania Coal & Coke Company; C. A. Owen, president, Imperial Coal Corp.; S. H. Clarke, vice president, Rochester & Pittsburgh Coal Corp., have been appointed as a special committee to carry on special studies in the premises.

Nearly 100 bituminous coal producers operating mines in Ohio and the West Virginia Panhandle, following an all-day meeting at Cleveland, Ohio, April 17, now are members of Northern Coals, Inc., a central marketing agency whose policy it will be to seek for its membership "a fair and equitable return" on coal, a "fair and equitable wage" for miners, and yet to offer the consumer a coal at a reasonable price.

A NUMBER OF FACTORS which influence mining of prepared sizes of coal are outlined in a recent editorial in *The Explosives Engineer* magazine. Other points affecting prepared sizes, aside from the acknowledged primary necessity of correct blasting with the proper explosives, are enumerated as follows:

At the face these factors in the character of the coal itself reduce prepared percentages; opening outcrop coal, increased retreating work, increased pick work, enlargement of rock binder, in-

crease in impurities in seam, and thinning out of seam. Mining methods reduce lump because of: Opening new rooms on butts, changing cutting machine without changing drilling and blasting methods, increase of narrow working places because of bad top, and increased development work. Loading and transportation reduce prepared sizes by: Breaking up large lumps to facilitate loading, insufficient clearance preventing loading of large lumps, bad track causing wrecks, lumps knocked off by low roof, rough handling, and unnecessary curtains across entries brushing off lumps. Outside, the process of reducing prepared sizes is continued by: Arrangement of dump in relation to bins, arrangement of picking table in relation to bins or conveyors, too much handling at tipple and carelessness in loading. Finally, shipping can exact its toll by: Rough handling, easily weather coal being exposed too long, and rarely by filing an unjust claim for slack coal.

JUNE 17, the last of the three days of the Annual Meeting of the National Coal Association, has been designated by the officials of "A Century of Progress" as "Coal Day" at the World's Fair grounds. This is done because of the fact that the arrangements of the Annual Meeting Committee provide for a visit to the Fair grounds on that day, when the coal, gas, oil and electric exhibits in particular will be inspected. George Harrington, Chicago member of the Annual Meeting Committee, is making the arrangements for the trip. Members and guests will leave from the Drake Hotel, the headquarters of the Annual Meeting. According to present plans, luncheon will be served on the Fair grounds.—*N. C. A. Bulletin.*

THE NUMBER 5 MINE of the Kemmerer Coal Company, located at Sublet, Wyoming, has always yielded the company's best commercial coal, but during the past year the haulage distance had grown so long that it was almost impossible to show a profit, operating the mine in the old way. Investigation showed that the No. 5 vein could be tapped at another point with a rock tunnel only 80 feet long. This point was only about 9,300 feet from the No. 5-A tipple and about three miles from the present No. 5 tipple. To move the No. 5 tipple from its old location to the new one would be expensive and would mean building a mile of new track, storage yards, etc. The No. 5-A tipple was not being used to full capacity and could easily handle the output from the new opening. This change would require only approximately 9,300 feet of track for mine locomotive service, which, of course, is considerably cheaper to construct than standard railroad track.

The most serious drawback to this scheme was the necessity of crossing a gully, at the bottom of which was a creek and the main highway from Kemmerer to Yellowstone National Park. A survey showed that a very good track, with a grade of about 65 percent in favor of the load, could be obtained by constructing a bridge with a span of 393 feet, 4 inches and a height of 52 feet, over the highway.

Because of present business conditions in the coal mining industry, very little money was available for new construction projects. The company, therefore, looked around for some inexpensive method of building the necessary bridge. There was at hand an accumulation of

NO HARM IN TRYING!

—Washington Daily News

10 inch steel pipe and a considerable amount of scrap rail in various mines which had been closed down.

The coal company designed, and with the aid of a General Electric welding set, built the 393 feet, 4-inch bridge, using the old pipe and the rail on hand. The only new metal utilized on the job was 135 pounds of General Electric type F electrode. As all of the old metal had already been written off the books, the cost of this bridge was but little more than the cost of electrodes and labor.

THE PROGRESSIVE MINERS of America on March 25 presented a referendum vote on the acceptance of the wage scale bill for the Illinois field. The attempt to organize Franklin County for the Progressives is resulting in a bitter fight between members of that organization and the United Mine Workers of America under contract with whom the mines are operated.

SIXTY-FIVE BITUMINOUS coal mines in 12 states have thus far been enrolled in the National Safety Competition of 1933 now being conducted by the United States Bureau of Mines. This is 7 more than had been enrolled at the corresponding date last year, and is another indication of the growing interest in accident-prevention, especially on the part of the higher executives of operating companies. Final enrollment in the 1932 contest was 108 bituminous mines in 14 states. Mining companies desiring to participate are urged to enroll their mines promptly. The National Coal Association will furnish upon request an enrollment application and a copy of the contest rules (No. 650 for both) governing awards. Enrollment is free. The only requirement is that companies furnish reports of accidents and man-hours worked; these reports are used as a basis for selecting the winning mine and to determine the relative standing of the various participants. The data submitted are held confidential as far as names of mines, mining companies, or locations are concerned, except that data concerning winners or mines having the highest records are announced at the end of the contest.—*N. C. A. Bulletin.*

THE FIRST conference between operators and miners in Ohio in about three years was held at Columbus on April 17 for the purpose of discussing wages, working conditions, etc., and to arrive at a permanent wage scale to take effect May 17 when the present agreement expires. Governor George White was largely instrumental in arranging the conference.

TENTATIVE FIGURES, now available as to coal mine fatalities in 1932, place the total at 1,166 against 1,463 (final figures) in 1931. West Virginia had the largest number of fatalities, 263, a decided improvement over the 351 of 1931. Pennsylvania anthracite came second with 245 fatalities also, a much better showing than the 383 of the previous year. Pennsylvania bituminous is third with 158, or considerably fewer than the 210 in 1931. Fourth place goes to Illinois with 114, an increase over the 92 of 1931, and fifth place to Kentucky with 101, a slight decrease from the 110 of the previous year.

Falls of roof and side in mines caused 598 fatalities out of the 1,166 fatalities for the year 1932; 160 from West Virginia, 142 from Pennsylvania anthracite, 92 from Pennsylvania bituminous, 51 from Kentucky, 34 from Illinois, and 23 from Ohio. Of the smaller producing states, Colorado with 14 fatalities from falls of roof and side had the poorest showing; Alaska, Georgia, North Carolina, and Michigan had no fatalities from falls in 1932.

Underground haulage caused 180 fatalities in 1932, 54 being in West Virginia, 33 in Pennsylvania anthracite, 33 in Pennsylvania bituminous, 12 in Kentucky, 11 in Illinois, and 9 in Colorado. The following coal mining states escaped haulage fatalities in 1932: Alaska, Arkansas, Georgia, North Carolina, Kansas, Maryland, Missouri, North Dakota, Oklahoma, and Texas.

Gas or dust explosions caused 167 fatalities, 54 in Virginia, 54 in Illinois, 23 in Kentucky, 14 in New Mexico, 7 in West Virginia, 7 in Pennsylvania anthracite, 3 in Pennsylvania bituminous, 2 in Washington, and 1 each in Colorado, Maryland, and Oklahoma.

Explosives caused 32 fatalities (to which, however, should be added at least as many more if explosions due to explosives were included.) Pennsylvania

anthracite had 14 fatalities due to explosives, Pennsylvania bituminous 4, Illinois 3, Kansas and Ohio 2 each, and each of the following had one: Arkansas, Iowa, Missouri, North Dakota, Oklahoma, Virginia, and West Virginia.

Electricity (excluding explosions started by electric arcs) caused 48 fatalities underground in the coal mines of the United States in 1932. Thirteen occurred in West Virginia, 6 in Pennsylvania bituminous, 6 in Kentucky, 5 in Pennsylvania anthracite, 4 in Alabama, 2 in each of the following states: Colorado, Indiana, New Mexico, Virginia, and Washington. One in each of these states: Arkansas, Michigan, Ohio, and Tennessee.—*Safety News Letter, National Safety Council.*

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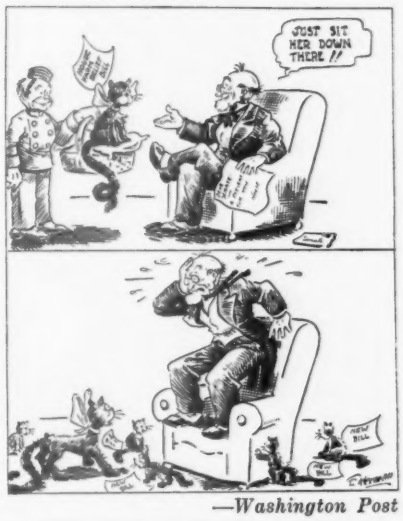
Silver

SILVER STILL OCCUPIES a large place in the national limelight. It is still in the midst of the battle between the proponents and opponents of remonetization. Hope is high that the present administration will do something to help the silver industry. The official renouncement of the gold standard sent silver stocks leaping. There is more and more evidence that the administration is contemplating placing silver in an important position in the forthcoming conferences with foreign representatives who will discuss world economic conditions. Press dispatches out of Washington on silver legislation are interesting, as per the following:

> "The headway of the inflation drive was shown in a Senate vote on an amendment to the administration farm relief bill which proposed a bi-metallic standard with silver standing at a ratio of 16 to 1 in relation to gold. It was defeated by 10 votes, 53 to 43. If it had not been for word passed from the White House, it is altogether probable that the proposal would have won, a result which would have surprised even its proponents.
>
> "This same source, in commenting upon the Roosevelt program, stated that if it shows results considerable of the steam will escape from the campaign of the inflationists. 'If it fails to show, then the drive for bi-metallism or for some form of currency inflation will gather such headway that the administration can halt it only with utmost difficulty.'
>
> "There were also reports bearing on the administration's plans for the forthcoming conferences, and it was stated that it seemed highly probable that an attempt would be made for some silver agreement with the British."

AT THE ANNUAL meeting of the American Smelting & Refining Company, Francis H. Brownell, chairman, said there is an increasing movement for higher prices of silver, largely because low silver prices are converting China into a purchaser of raw materials and a manufacturer of cotton cloth, cigarettes and other articles previously bought in the world market. In fact, China has begun to export finished cotton goods. He said the fact that silver had gone down much more than the prices of manufactured goods, caused silver price to act as 100 percent tariff, against importation of manufactured goods from the Occident. Consequently as raw materials have decreased in price much more than finished goods, the Chinese have bought the raw materials, erected factories, and now are supplying their own needs in many articles.

ANOTHER SURPLUS!



—*Washington Post*

L. VOGELSTEIN, American Metals Company, in commenting upon the silver outlook, said:

> "Production during 1932 was materially reduced and is estimated at 166,000,000 ounces. During the five years ending with 1930, India and China absorbed yearly more silver than the world produced last year. During 1932 quantities of silver again came on the market from demonetization in Russia and sales by the Indian Currency Control. In spite of the fact that during 1932 Germany bought a large quantity of silver, the total supply of silver available was in excess of consumption and stocks have accumulated in the United States and England. Consumption of silver for so-called industrial and art purposes fell off during the year 15,000,000 or 20,000,000 ounces. There is no doubt about it that the sale of silver by various governments has brought about the demoralization of the silver market. In addition the low prices for all commodities had a bad effect on the silver situation.
>
> "It is to be deplored that the governments of the world cannot come to an understanding regarding a sound silver remonetizing plan not based on inflation or debasement of the money standard, but with a view to freer use of silver as hard money. Experience has shown, in all of the countries which have gone through the severe depression that silver money has a great attraction for the people. Some exaggerated demands for free coinage or a fixed ratio between silver and gold have frightened off the sound money people and prevented a reasonable legislation for the use of silver for monetary purposes. There cannot be any doubt that the freer use of silver for coinage purposes will result in a relaxation of the strain on central banks. This country's production of silver naturally decreased considerably with the reduction in production of lead, zinc and copper."

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Copper

HORNBLOWER & WEEKS issue a timely discussion of "Deflation in the Copper Industry":

> "With current news indicating the United States copper mines are about to enter upon a period of nationwide shutdown, the end of deflation in the copper industry seems to be in sight. Therefore, it is of real investment concern to understand how thoroughly the copper industry has been readjusted and how violently the price of copper securities has contracted.
>
> "The year 1929 was the record year in the copper industry, when the production of approximately 3,600,000,000 lbs. was attained at an average price level of 18.23 cents a pound, indicating a dollar value on the 1929 copper production of approximately $660,000,000. The Brandeis, Goldschmidt & Co. (of London) estimate indicates a 1932 copper production of about 1,800,000,000 lbs. in 1932, when the average price is estimated at approximately 5.67 cents per pound, indicating a $103,000,000 total value for the copper production. Thus, the dollar value of copper production has been deflated nearly 85 percent. During the same period, the market value of all copper securities is estimated to have shrunk from $7,121,000,000, using the highs of 1929, to approximately $767,000,000, using the closing prices for 1932, or better than 89 percent, indicating that the security values have been faced with an even greater degree of deflation than has the copper industry.
>
> "Of the 1929 totals, United States companies contributed approximately $4,315,000,000, Canadian companies $1,358,000,000, African $210,000,000, and South American and other foreign companies approximately $1,236,000,000. The African companies, in spite of their increased production, have suffered a deflation estimated at approximately 65 percent. The Canadian companies, although aided by their gold output, have suffered a deflation of more than 85.5 percent, as compared with a

91 percent deflation in the market values of the various United States copper companies and their South American subsidiaries.

"This violent price deflation has brought about a major readjustment within the copper industry proper, so that the leading companies are now producing copper at a cost that would have seemed incredible as late as three years ago. With a return to anything like the pre-war level of prices, the profits of the copper companies would average nearly as high as they did in the three-year period from 1927 to 1929.

"The extent of the deflation for individual copper companies during the same period is most clearly brought out by comparing their present market value with their former earning power, which in the case of the three largest companies runs as follows:

"Anaconda, which had a market value of $1,592,000,000 in 1929, had suffered a contraction of nearly 95 percent, to a present valuation of approximately $83,454,000. This compares with the company's net earning power of $78,576,000 for the year 1929 and an average earning power of $45,544,000 for the three years, 1927 to 1929.

"Kennecott had contracted from a high value of $861,000,000, 89.1 percent, to approximately $93,895,000, which in turn compares with 1929 earnings of about $52,756,000 and a three-year earning power of about $42,560,000 for the years 1927 to 1929.

"Phelps Dodge, including the Calumet & Arizona Company, acquired in 1931, had a high market value of approximately $279,962,000, which had shrunk 90 percent to approximately $27,817,000, as of the end of 1932. This compares with 1929 earnings of $17,333,000 and an average earning power of $14,160,000 for the combined properties during the years 1927 through 1929.

"From the above figures it appears that the shares of the three leading American copper companies, which closed April 5 averaging only one-half a point above their year-end prices, are selling at about one and one-half times their 1929 net earning power and less than two times their annual average earning power for the three-year period from 1927 to 1929. The realization of the extent of the deflation, which has already been accomplished in the copper industry, has supplied the background for the important investment accumulation that has been quietly going into the copper stocks over a period of the last six months. This industry has certainly been readjusted to the stern realities of the depression. Any fundamental turn in the copper industry, such as an improvement in the price of metal, which a mine shutdown should accomplish, should immediately be reflected in copper securities. This should be particularly true of copper companies enjoying comfortable credit conditions."

A "COPPER HIGHWAY!" A highway on either side of which are the marvels of the Electrical Age!

This will be a feature of the Central Station Industry Exhibit in the Electrical Building at the Century of Progress International Exposition beginning June 1 in Chicago.

THAT ONE SURE THING CROP

YOU DON'T HAVE TO PLANT THOSE, THEY JUST COME UP EVERY YEAR!
WHAT? MY PERENNIAL BONUS?
DOMESTIC ALLOTMENT POLITICS
TAX PAYERS

—Chicago Tribune

The highway will be 1,200 feet long. It will be defined by three continuous bars of copper suspended from the ceiling, much after the fashion of the green and red stripes that guide the uncertain traveler through the intricacies of the New York subway system. But instead of reading "Follow the Green Line," the sign will say: "Follow Electricity Down the Copper Highway."

The visitor, leaving Radio Hall on the second floor of the Communications Building and entering the Electrical Building, will encounter over a wide doorway the gigantic figure of a man, one hand on a switch, the other on the throttle of a generator. Here, the Copper Highway begins, continuing around a circular balcony to the various sections of the Central Stations Industry Exhibit.

From the generator will run a triple line of copper bus bars, standard in every way and precisely the same as those used for the conduct of heavy voltages in generating plants and central electrical stations. The bars, measuring four inches by a quarter inch, are on end; and they will shine against a black background, with concealed lighting effects. The middle bar will be lower than the outer two, for emphasis.

At intervals along the Copper Highway smaller bus bars will run to the various exhibition booths which will show, in turn, modern lighting effects for the home, the office and all other purposes. On one side of the balcony, which is circular, will be the displays of the Central Station Industry Exhibit; on the other, over a railing, will be seen, twenty feet below, the marvelous exhibits of the General Electric Company and the Westinghouse Electric and Manufacturing Company, which will include their latest developments, miraculous in conception.

The Copper Highway, incidentally, will tend to familiarize visitors at the Century of Progress with a product of copper important in the power industry but with which the general public probably is none too familiar. Copper bus bar was chosen because it symbolizes the electrical industry.

Bus bars are used in large tonnages, for carrying large voltages. The words "bus bar" come from an abbreviation of "omnibus Bar," obviously, for wholesale transportation of current.

Tons without number of copper bus bars are used in large generating plants and central stations. They serve to carry great volumes of current to high transmission lines. Bar is not the only form in which it is used. This copper conductor also appears as tube and channels.

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Zinc

MR. WALTER RENTON INGALLS, of the American Bureau of Metal Statistics, in an address before the recent meeting of the Zinc Institute, said:

"In looking forward in respect of zinc I am an optimist, but I am not going to offer any timed or any measured prophecy. In common with the other metals we must await revival of demand. I am going to confine myself to a summary of things as they are; not of all things, but a few of them.

"Zinc is free from the bedevilment of the return of junk that afflicts copper and lead. Our statistical accounting shows more or less of what is called secondary zinc, but really it is not so. It is mainly new zinc that is passing on to final consumption, and on the way is counted twice over.

"If you will pause to think about it you will see why this must be so. The zinc that goes into galvanizing and painting is impossible of economic reclamation. Of what goes into brass we recover a little. Of our rolled zinc the largest individual consumptions are battery cans and for fruit jar tops, which become so dispersed that collection is not worth while.

"What is there for the junk man to collect? The lining ripped out of the valley of an old shingle roof. The lining of an old ice box. An old floor plate on which a kitchen range used to stand. Some moldings from old automobiles. The whole is negligible.

"I foresee that there is going to be an increase when old diecastings begin to come back to us but the input into those articles has not yet outlived its usefulness to any great extent. However, we may anticipate the advent of such

junk, and while we may be joyful over the increased demand for die-casting zinc we may be conscious of an aftermath to come.

"The present statistical position of zinc in this country seems to me to be stronger than is appreciated. The consumption in 1932 was blood-curdling in its decline from 1931, especially under the heads of galvanizing and brass making, yet the finding is positive that it was in excess of the deliveries of spelter ex-metallurgical works, wherefore the deduction is inescapable that there must have been decrease in the invisible stocks. The stocks of metal reported by producers declined in 1932. So far this year they have been increasing again. This part of the picture is misleading if viewed alone, for in 1932 the stocks of zinc in ore in all positions back of the smelters' piles of metal decreased, and the increase in spelter stocks since the beginning of this year has been largely the consequence of a further conversion of ore stocks, which must therefore have been further depleted. Such conversion has been possible in respect of the Tri-State mill stocks, but not as to those in Utah, Nevada, and the Northwest.

"We may remind ourselves also that the producers of spelter, of oxide and of lithopone draw largely upon the same ores for their zinc supply and that when we examine the zinc industry of this country we must take a much broader view than what concerns spelter alone. In this respect the economic structure of the zinc industry abroad is simpler than is ours."

DURING THE LAST few months farmers by the thousands, as well as others directly interested in galvanized roofing, have had the opportunity to inspect the new educational exhibit prepared and shown at a number of important conventions. Recent exhibits have been at the Winter Fairs of New York State and Pennsylvania at Rochester and Harrisburg, respectively, at the Farmers' Week Program at Ohio State University, Columbus, and at various dealers' conventions.

In all of these meetings a high degree of interest was shown which demonstrates that in spite of depressed conditions in the agricultural field, farmers are still critical judges of value and are more than ever disposed to invest in products whose value can be definitely assured.

Of particular interest were the studies by the Zinc Institute's engineers, showing the comparative durability of light and heavy-coated galvanized sheets, as a result of which most of the leading steel companies have undertaken the production of galvanized roofing carrying a 2-oz. zinc coating and bearing the distinctive "Seal of Quality" label.

Abundant proof was found of the success of the educational program which the American Zinc Institute has been conducting, especially in the agricultural field, during the past year and a half. In a number of instances visitors at the exhibit explained that they were familiar with the "Seal of Quality" and for what it stood; many of these had already made purchases of "Seal of Quality" sheets and many others were making definite plans for buying them. The simplicity of the "Seal of Quality" idea and the convincing logic of its presentation have won thousands of friends, and it is evident that when general buying is again resumed a tremendous volume of these heavy-coated sheets will be used in rehabilitating rural structures.

Substantial headway has been made in developing cooperation among agricultural colleges and extension departments in regard to heavy-coated galvanized sheets. In a number of the principal farming states the descriptive booklets issued by the Zinc Institute are being regularly distributed to agricultural students as reference material relating to farm buildings. Instructors are discussing them in their lectures and various county agents are consistently recommending their use among their patrons.

The extension of the "Seal of Quality" program has naturally been greatest in the agricultural field, yet gratifying progress has also been made in other directions, particularly among industrial concerns which have to erect and maintain large mills, warehouses or similar buildings, in which galvanized sheets constitute the logical material for roofing and siding. A number of such concerns have definitely standardized on heavy-coated sheets and it is expected that this practice will be widely extended, as knowledge of the superior value of heavy zinc coatings becomes more widespread. During the last year three additional steel companies, all large galvanized sheet manufacturers, have been issued licenses to produce "Seal of Quality" sheets under Zinc Institute supervision.

■ ■ ■

Iron

WITH MANY of the large ore producers turning back properties to fee owners, because of the tax situation, the question of iron-ore tax in its relation to the prosperity of the industry is uppermost in the minds of the producer at this time. W. P. Chinn, general manager, Pickands Mather Company, summarized the situation in a recent talk, as reported in *Skilling's Review*. Mr. Chinn said:

"The iron mining industry in Minnesota is tremendously overtaxed due to the fact that our laws require that the assessed valuation of mining property be determined at a rate 25 percent higher than any other class of property and 50 percent higher than farm lands, and on top of this we have personal property, occupational tax, royalty tax and the local tax levies, the latter much higher than there is any justification for. This last statement is backed up by the fact that range towns do levy from six to seven times the amount of money that is levied in towns of like size scattered throughout the state and outside of the Mesaba mineral belt.

"The depression has resulted in a tremendous deflation of ore values, and although the mining companies recently asked the State Tax Commission for a reduction in value of only 20 percent, the record established in the hearing before the Tax Commission clearly showed 40 percent to 50 percent reduction would about offset actual values that we can anticipate for several years to come. The net result of this terrific overtaxation is that in the year 1929, when the shipment of 65,000,000 tons was made, which was the largest shipment ever made with the exception of the year 1916 from the Lake Superior District—and 46,922,911 tons of this were shipped from Minnesota, the actual ore taxes paid amounted to $22,082,748. This money divided by the total shifts worked in the mines amounted to about one and one-third times the wages per day received by the men employed in the industry for each day that each man worked. In 1931, when only 17,155,000 tons of ore were shipped from Minnesota, the taxes still amounted to $19,000,000, or approximately three times the total labor pay roll.

"Another way of looking at this tax picture is that in 1930, when 34,540,000 tons were shipped from Minnesota, comparable to the previous 10-year average production, there was paid out for taxes 43 percent of the net income of the mining corporations that shipped this ore. The 4,170 corporations in Minnesota, including these mining corporations, paid 33.38 percent. This shows clearly that the mining industry is taxed at least 25 percent more than the other lines of business in this state. Taxes per ton for several years have averaged about 25 percent of the gross value of the ore at the mine. This 25 percent is about ten times as large as the same figure applied to all ores mined in the United States. This should be sufficient proof to every Minnesotan that the iron mining industry, which should mean so much to him, is in grave danger.

"The Minnesota State Tax Commission reports that in 1920 farm or unplatted real property represented 61.63 percent of the total taxable value of rural and urban real property, and urban or platted property 38.37 percent, and since then there has been a constant shifting in these relative values from rural to urban property, until at the present time rural property has dropped to 44.68 percent and urban property has increased to 55.32 percent of the total.

"Since 1930 there has been a decrease of 14.41 percent, or $209,354,736, in the total assessment of farm and urban real property in Minnesota.

"Both the farmer and the city dweller are very hard hit at the present time due to the depression and they are very desirous of a reduction in taxes, and quite naturally there is a tendency on the part of the 3,000,000 people in the state to decrease their taxes by increasing the tax load on the one industry that supports approximately 300,000 people in the northeastern corner of the state. Hence, the desire to increase iron ore taxes one way or another in spite of the facts given above, which show clearly that the industry can not go along and pay the enormous taxes of around $20,000,000 a year and continue to exist in this state. The answer to this question is that taxes must come down throughout the state and less public expenditures must be made over a long period of years if we are to have a return of prosperity which can be of benefit to its population. Increasing the tax load on the Minnesota iron mines means disaster for this industry. There are about 8,000,000 in this country dependent on the iron and steel industry, and the prosperity of the Nation depends largely on the prosperity of this industry. If Minnesota ores can not be cheaply produced. this industry will get its ore elsewhere and Minnesota will lose one of its most valuable assets."

Confiscatory Mine Taxes

THE uncompromising attitude of the state administration toward taxation of the iron mining industry in Minnesota is extraordinary, to say the least. The annual tax bill of this industry, which has done so much in so many ways for Minnesota, is three times as much as it was in 1913, though the ore reserves have been reduced meantime by more than 200,000,000 tons. This fact alone should call for a huge tax reduction, but when such an emergency as now exists the state should not wait to be asked to relieve the pressure, it should offer to do so.

■ ■ ■

A REVISED STANDARD, frogs, switches, and turnouts for coal-mine tracks (M7.1-1933), has been approved by the American Standards Association as American Recommended Practice. The revised document covers part of the scope for the project on coal-mine tracks, signals, and switches and presents a more comprehensive treatment than the former standard, which was approved in 1927. Under the sponsorship of the American Mining Congress, the sectional committee through an active subcommittee under the chairmanship of R. L. Ireland, Jr., vice president of the Hanna Coal Company, Cleveland, Ohio, canvassed the industry on several occasions and considered a number of drafts in order to develop satisfactory designs of these important parts of coal-mine tracks.

F. C. Hohn, of Hazleton, Pa., is the chairman of the sectional committee, and E. R. Coombes, of the American Mining Congress, is serving as secretary.

Copies of this standard may be obtained from the American Mining Congress, Munsey Building, Washington, D. C., or from the American Standards Association, 29 West Thirty-ninth Street, New York.

■ ■ ■

THE UNITED STATES Smelting, Refining and Mining Company has announced plans for the construction of a lead refining plant of large capacity at this company's smelting and ore-dressing works at Midvale, Utah. The announcement which has been made by Downey B. Muir, Jr., says:

"The new plant will afford Utah its first mine-to-market production of silver, lead, and gold ores. Products of the refinery will be 99.999 percent lead, silver 999.99 fine and pure gold. The Parker process will be used and facilities will be so arranged that molten lead from the smelter blast furnaces will be conveyed directly to the refinery for reduction. Approximately 100 men will be employed during the construction period of April 1 to September 1. When the refinery is placed in operation it will add 50 men to the United States Smelting, Refining and Mining Company payroll at Midvale.

"This refinery, with the exception of the Bunker Hill and Sullivan plant in northern Idaho, will be the only lead refinery between Omaha and the Pacific Coast, and will be the largest refinery in the entire territory west of Omaha, including the Pacific Coast. The refinery will have a capacity of 72,000 tons of lead per year, or a monthly operating capacity of 6,000 tons."

■ ■ ■

Potash Industry in 1932

TO SUPPLY the mineral industry promptly with data on potash production and markets during the past year, the following information is furnished by A. T. Coons, Mineral Statistics Division, and O. E. Kiessling, Chief Economist, United States Bureau of Mines.

Potash produced in the United States in 1932 amounted to 143,120 short tons of potassium salts, equivalent to 61,990 short tons of potash (K_2O). Sales by producers amounted to 121,390 tons of potassium salts with an equivalent of 55,620 tons of K_2O. The potash materials of domestic origin sold by producers in 1932 were valued at $2,102,590. About 41,000 tons of potassium salts with an available content of 28,000 tons of K_2O remained in producers' stocks December 31, 1932. The output increased 7 percent in gross weight with a decrease of 3 percent in K_2O content. The sales of salts decreased 9 percent with a decrease of 13 percent in K_2O content. The total value of the sales decreased 32 percent. The sales include material of which the available potash (K_2O) content ranges from 22 percent to 63 percent with an average of over 45 percent. The principal sources of the potash salts in 1932 were from salines at Trona, Calif., molasses distillery waste at Baltimore, Md., and crude and refined salts at Carlsbad, N. Mex. The first refined salts were shipped from Carlsbad in 1932. The dust from cement kilns near Hagerstown, Md., was also utilzed as a source of potash in 1932. Cotton boll ashes from cotton gins in Oklahoma and Texas were also sold for their potash content. Small quantities of alunite were shipped from Sulphur, Nev., and Marysvale, Utah, chiefly for experimental use as fertilizer material.

The potash salts imported for consumption into the United States in 1932, according to the Bureau of Foreign and Domestic Commerce, amounted to 330,964 short tons. The estimated K_2O equivalent of these imports was 113,505 short tons. This represents a decrease of 43 percent in gross weight from the imports of 1931. The total value of imports was $8,841,838, which was 46 percent less than in 1931. The potassium salts imported, chiefly for fertilizer, amounted to 287,929 tons (K_2O content approximately 96,170 tons), valued at $5,711,347, a decrease of 46 percent in gross weight and 53 percent in value.

The potassium salts imported for the chemical industry amounted to 43,035 short tons (K_2O equivalent approximately 17,335 short tons), valued at $3,130,491, a decrease of 11 percent in gross weight and of 27 percent in value.

The exports of potassium salts amounted to 887 short tons of potassium compounds (not fertilizer), valued at $241,179; 1,589 short tons of potassium chloride or muriate, valued at $54,223; and 445 short tons of other potash fertilizers, valued at $15,805. These figures represent a decrease of 23 percent in quantity and 35 percent in value for potassium salts (not fertilizer), of 95 percent in quantity and 96 percent in value for muriate, and 62 percent in quantity and 59 percent in value for other potash fertilizers.

■ ■ ■

EARLY REPORTS for 1932 received by the United States Bureau of Mines and covering approximately 34 percent of all quarry workers in the United States, show an accident-frequency rate in 1932 that was almost identical with the rate for the same companies in the year before. The accident-prevention experience of these companies revealed a rate of 29.69 lost-time accidents per million man-hours of exposure in 1932 as compared with 30.10 in 1931. Final figures covering the whole quarrying industry in 1931 indicated a rate of 41.04 accidents per million man-hours; hence the safety record of the companies whose reports have not as yet been received by the Bureau of Mines was probably less favorable than that of the com-

(*Continued on page* 45)

LEGISLATION

THE LEGISLATIVE SITUATION in Washington has continued at breathless pace. The administration is driving with a strong hand, and until the inflation program met with surprisingly little opposition, considering the revolutionary proposals Congress has before it for business and political reform.

The mining industry is intricately involved in many of the proposals which have included remonetization of silver, Federal control of the coal industry, the compulsory adoption of the 30-hour week, a minimum wage, development of Muscle Shoals, to mention only a few. It is apparent that President Roosevelt is determined to keep Congress busy on administrative proposals in order that there may be a minimum of effort spent on pushing pet projects.

THE 30-HOUR WEEK bills have brought a flood of opposition from practically every mining district. Foremost in this plan has been the bill (S. 158) introduced by Senator Black of Alabama, which passed the Senate on April 6, but was not transmitted to the House of Representatives because of a motion for reconsideration made by Senator Trammell of Florida. Attempts were made for a number of days to amend the bill by including a paragraph which would require the 30-hour week and 6-day provision to apply in the case of all foreign goods imported into the United States. The amendment would have constituted, in a practical sense, an embargo against imports. This, it is believed, would hinder the administration in its reciprocal tariff program, as well as in its negotiation at the coming world economic conference. This bill has now reached the House Labor Committee, where it is a companion to the Connery bill, introduced by Congressman Connery of Massachusetts, which as introduced embodies the foreign goods provision.

Secretary of Labor Frances Perkins appeared before the committee on April 5 and advocated a number of amendments embodying provisions for hours of work boards created for the purpose of considering applications of the employers of labor for latitude under the "elastic" provisions of the bill. Another amendment provides for a wage board to consider the matter of a "fair and reasonable wage" sufficient to maintain "a reasonable standard of living." In the formation of the hours of work boards it is contemplated that there shall be three members: (1) A representative of the Department of Labor, (2) a representative of the employes to be selected by the employes, and (3) a representative of employers, to be approved by the Secretaries of Labor and Commerce.

A provision of the bill permits of the expansion of the 30-hour week and 6-hour day into a 40-hour week, not to exceed an 8-hour work day for a period of not to exceed 10 weeks in any one calendar year. This is to care for periods of extraordinary activity, largely seasonal, but it is necessary that the employer make representation to the hours of work board and secure its permission before taking advantage of the "elastic" provisions of the bill in the application of the 40-hour week.

The wage board is given authority to make the fullest investigation and may call for all books and records and invoke the aid of the district courts in so doing, and may then recommend what it considers to be proper practices in the matter of "fair and reasonable wage rates" sufficient to maintain a "reasonable standard of living." The wage board is authorized to publicize the names of employers who do not comply with its recommendations and may, after a period of six months has elapsed, make the recommendation mandatory upon the employer.

At a meeting of the Labor Committee of the House of Representatives on April 19 it was decided to make public the amendments recommended by Secretary of Labor Perkins and to hold public hearings. Therefore hearings will begin on this subject on April 25, before the Labor Committee of the House. Secretary of Labor Frances Perkins will be heard first, and will be followed by departmental representatives and Congressmen. Also President William Green, of

the American Federation of Labor, will be heard. At this writing (April 23) it is anticipated that one representative for each industry will be heard. The American Mining Congress has been granted time to appear and will present the viewpoint of the mining industries.

THE SO-CALLED "Securities Bill" (S. 875), introduced by Senator Robinson of Arkansas for Senator Ashurst of Arizona, has been referred to the Committee on the Judiciary, but the committee was discharged and the bill has now been referred to the Committee on Banking and Currency. Section 14 of the bill makes it unlawful for any newspaper or periodical to accept advertising for the sale of mining securities. This would work a serious hardship on the development of small mining enterprises, which must, in the very nature of things, secure capital from outside sources, and would serve to prevent the development of prospects and small mining ventures, which have in the past been a great source of revenue, and have helped make mining the great asset it is.

THE HAYDEN-LEWIS Federal coal control bill is the center of attention in many quarters, and may ultimately be made the subject of public hearings before the Interstate and Foreign Commerce Committee of the House. This bill is substantially the same as the bill sponsored by Senator Hayden and Congressman Lewis, in the Seventy-second Congress, and contemplates an excise tax on the gross sales realization of every ton of coal produced, with a drawback of practically the entire tax when the producer comes under what is to be known as a "National Coal Conservation Association." The bill provides for cooperative marketing for the producer and collective bargaining for labor, with allocated tonnage between 30 districts indicated by the bill, and further allocation as between producers in each district. The bill is patterned substantially after the British Coal Mines Act.

Suspension of Assessment Work on Mining Claims

The bill, S. 7—suspension of assessment work on mining claims—introduced by Senator Borah, has been reported by the Mines and Mining Committee of the Senate and is now on the Senate Calendar. In the House, Representative Joe L. Smith's bill is inactive, due to the difficulty of securing a place on the calendar, and has not as yet been reported by the Mines and Mining Committee. The mining industry is pressing for action and enactment is hoped for before the adjournment of Congress.

The difficulty in the development of the Farm Relief Act is resulting in the consumption of many days in the Senate and will undoubtedly consume much more time in the special session. The effort made by Senator Wheeler of Montana to embody the use of silver as the monetary base as an amendment to this bill was lost on April 17.

Muscle Shoals

The consideration of Muscle Shoals legislation is now before the House Military Affairs Committee and embodies the wide project for the development of the Tennessee Basin. It is the subject of extensive public hearings, and the future course of the bill is a matter of much uncertainty.

THE POSSIBILITY of tariff revision becomes nearer a fact daily. According to official statements, the President is to sponsor a bill that will call for a flat 10 percent cut in American tariffs. The American Mining Congress has called a conference of those interested in this subject to meet in Washington, May 4. With the 30-hour week increasing mineral production costs, and with depreciated currency of foreign countries still further reacting against the mineral product, the proposed "reciprocal tariffs plan" needs serious consideration.

WHILE THE ADMINISTRATION is slow in making its appointments to public offices, considerable interest attaches to those appointments. For instance, industry generally is interested in the proposed new Commissioner of Internal Revenue, who at this writing will probably be ex-Congressman Guy Tresillian Helvering, lawyer and member of Congress from Kansas from 1913 to 1919, where he was a member of the House Ways and Means Committee in the Sixty-fourth and Sixty-fifth Congresses. Although his name has not as yet been submitted to the Senate, it is understood that he is the President's selection.

AMONG THE important state legislatures that are still in session is that of Pennsylvania, which continues to be prolific in its recommendations, one of the most recent of which is to cut the State Department of Mines budget a total of $172,000.

A 3-mill fee for inspections of anthracite or bituminous mines, charged against each ton of coal mined during the year preceding the time of examination, is provided in a bill introduced in the Pennsylvania House of Representatives. However, Governor Pinchot is opposed to placing an additional tax on Pennsylvania's coal industry, proposed by the bill.

THE FOLLOWING BILLS of interest to mining have been introduced in the National Congress, and are now before it for consideration:

Anti-Trust

To amend Section 2 of the act entitled "An act to supplement existing laws against unlawful restraints and monopolies, and for other purposes," approved October 15, 1914 (38 Stat. L. 730; U. S. C., title 15, sec. 13). (S. 1389—Copeland, referred to the Committee on Interstate Commerce.)

Commerce

To limit the effect of the regulations of commerce between the several states and with foreign countries. (S. 1155—Long, referred to the Committee on Interstate Commerce.)

To regulate interstate commerce. (H. R. 4232—Glover, referred to the Committee on Interstate and Foreign Commerce.)

Conservation

For the conservation of oil and gas and protection of American sources thereof from injury, correlation of domestic and foreign production, and consenting to an interstate compact for such purposes. (S. 814—McGill, referred to the Committee on the Judiciary.)

Currency

To establish a bimetallic system of currency, employing gold and silver, to fix the relative value of gold and silver, to provide for the free coinage of silver as well as gold, and for other purposes. (H. R. 4982—Lemke, referred to the Committee on Coinage, Weights and Measures.)

To declare a monetary policy and regulate the value of money in accordance with paragraph 5, section 8, article 1, of the Constitution of the United States, to provide for the maintenance and stabilization of the gold standard, and for other purposes. (H. R. 5172—Busby, referred to the Committee on Banking and Currency. Similar bills were introduced in the House of Representatives by Rankin—H. R. 5158, and by Goldsborough—H. R. 5160 and H. R. 5073.)

Providing for and regulating the issue, directly by the Treasury Department of the United States, of a new form of Government currency to be called, "United States currency notes"; making such notes and United States bonds interchangeable, repealing all laws authorizing the issue of gold certificates; providing for the cancellation and retirement of gold certificates; authorizing the Secretary of the Treasury to exchange United States currency notes for gold certificates; providing for the establishment and the maintenance by the credit of the United States Government of a separate redemption fund for the redemption of United States currency notes; and for other purposes. (H. R. 4562—Dunn, referred to the Committee on Banking and Currency.)

To authorize the purchase by the Government of silver, to provide for the issuance of silver certificates in payment therefor, and for other purposes. (S. 818—Bankhead, referred to the Committee on Banking and Currency.)

To establish a stabilized currency and adopt the wholesale commodity index line of 1926 as a standard of value. (H. R. 5066—Cross, referred to the Committee on Banking and Currency.)

To provide for regulated expansion of currency and credit, to reduce the national debt, to raise the price level of com-

(*Continued on page* 47)

L. N. THOMAS

National Chairman of the Program Committee

Tenth Annual Coal Convention

The TENTH ANNUAL COAL CONVENTION and EXPOSITION

of

The American Mining Congress

A. B. Jessup

PITTSBURGH, THE CENTER of one of America's great industries —a coal industry comprising a capital investment of over twelve billions of dollars with some 4,500 operating mines—will serve as headquarters for the Tenth Annual Convention and Exposition of the Coal Division of the American Mining Congress. Some 2,500 practical coal operators, whose combined companies' produced three hundred and fifty million tons of coal last year, will gather at the William Penn Hotel the week of May 8 to 12 to thrash out among themselves the problems and difficulties of their industry.

The program, developed under the supervision of L. N. Thomas, chairman of the National Program Committee, represents the sincere efforts of a group of outstanding figures of the industry to lay before the convention not only these difficulties which have set the industry back so far, but also their probable solutions. Each of the eight great districts of the coal industry; the Pennsylvania, Northern West Virginia, Ohio; the Illinois, Indiana; the Southern West Virginia; the Virginia, Kentucky, Tennessee; the Southern; the West Central; the Far West; and the Anthracite Districts; have gathered together their own particular problems as well as those pertaining to national production, and will place them

Harry La Viers

J. Wm. Wetter

DISTRICT CHAIRMEN

H. B. Husband

C. J. Sandoe

L. Russell Kelce

Gomer Reese

PROGRAM COMMITTEE

F. C. Pfahler

R. L. IRELAND, JR.
Chairman
COAL DIVISION

PROGRAM COMMITTEE

T. D. Lewis

Lee Long

before the convention during the four day's session. If any problem has been overlooked, it is only because the Industry, itself, does not know about it. The problems to be discussed have been divided into the following groups: Management Problems, Mining Methods, Safety, Coal Cleaning, Blasting, Mechanical Production, Power, Research, Haulage, and Coal Analysis.

PAPERS ON THESE SUBJECTS represent the efforts of men who know their work, men who have proved successful as practical operators in their own fields. It is the inter-exchange of the ideas of such men, coming from problems arising in all sections of the nation, from Pennsylvania Anthracite and Bituminous, to Alabama and as far West as Utah, which have made former conventions so successful, because operators have found that from such mutual efforts comes recognition of faults of the past, and a clearer outlook as to what the future may hold.

Among the prominent Pittsburgh operators who are

K. A. Spencer

■ COMMITTEE ON ARRANGEMENTS ■

M. D. Cooper

P. C. Thomas

Thos. G. Fear

L. E. Young

PROGRAM COMMITTEE

Geo. McFadden

Paul Weir

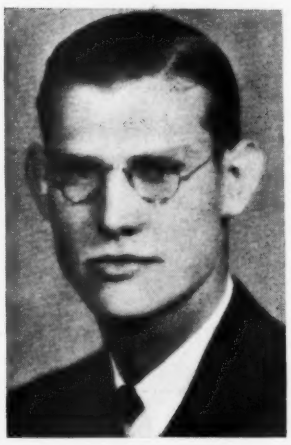
C. M. Lingle

Jos. L. Osler

striving to make this tenth annual May meeting successful is P. C. Thomas, vice president in charge of operations, the Koppers Coal Company, who will serve as chairman for one of the seven sessions to be held. Other gentlemen serving the convention as chairmen are: R. H. Morris, general manager, Gauley Mountain Coal Company, Ansted, W. Va.; W. J. German, general superintendent, Pocahontas Fuel Company, Pocahontas, Va.; J. C. Haddock, president, Haddock Mining Company, Wilkes-Barre, Pa.; T. J. Thomas, president, Valier Coal Company, Chicago, Ill.

THE CONVENTION will officially open on Monday afternoon, May 8, with a paper and two discussions on "Budget Control of Operations." As the cry of "Costs-Costs-Costs" is still ringing throughout the industry, operators can well afford to analyze their operating difficulties. Other fertile fields of thought at this opening session will be: Economic Percentage of Coal Recovery, Standardized Mine Timbers, and Prevention of Personal injuries.

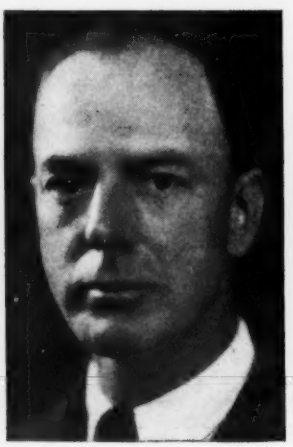
The morning session of Tuesday opens thought to another field in the constant demands of operators for



Jos. Pursglove, Jr.

Carl McFarlin

P. C. Graney



W. J. Borries

G. B. Pryde

PROGRAM COMMITTEE

H. D. Smith

A. L. Hunt

T. R. Johns

Thos. H. Claggett

"Something New." The industry has been searching a long time for new thoughts, new ideas, new equipment. "New Things in Coal Mining" will bring a partial answer to their queries. The afternoon session will be devoted to the same subject.

The 12 papers to be presented on Wednesday deal with Safety and Mechanical Mining, together with Developments in Explosives. Thursday, the closing day, will bring up the all important question of "What To Do With the Surplus Miner?" A paper and three discussions will be given. Safety and Coal Research will also be discussed. The afternoon session will see the convention come to its close with discussions on Power Utilization and Economics.

Nineteen-thirty-three is the first time in the history of these conventions and expositions that they have been held in Pittsburgh. For nine consecutive years, beginning with 1924, they were held at Cincinnati, Ohio. They are now recognized as the one time of the year that both the operator and the manufacturer can "get together" and discuss

W. L. Robison

E. W. Judy

C. W. Connor

C. E. Abbott

C. A. Griffith

Geo. F. Campbell

H. H. Taylor, Jr.

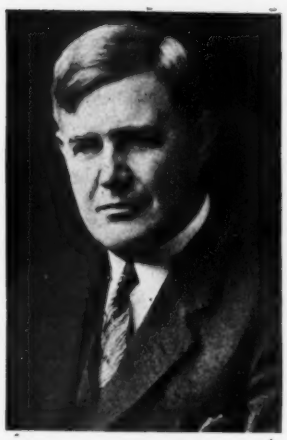
C. T. Hayden

R. H. Morris

B. H. Stockett

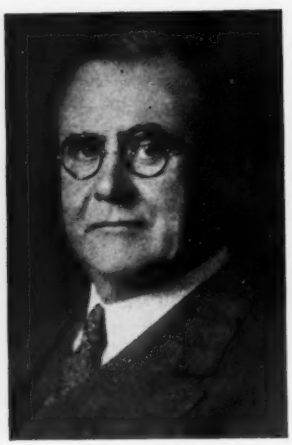
all their mutual problems. The program for the convention has been developed under the able supervision of L. N. Thomas, assisted by J. W. Wetter, Madeira Hill Coal Mining Company; C. J. Sandoe, West Virginia Coal Company of Illinois; H. B. Husband, C. & O. Coal Company; Harry LaViers, Northeast Coal Company; J. R. Kelce, Sinclair Coal Company; Gomer Reese, Kemmerer Coal Company; and A. B. Jessup, Jeddo-Highland Coal Company. The Exposition has been developed under the supervision of Ralph C. Becker, chairman of the Manufacturer's Section of the American Mining Congress. The General Electric Company has again loaned the services of L. W. Shugg, as director of exhibits. E. R. Coombes, of the general staff of the American Mining Congress and editor of THE MINING CONGRESS JOURNAL, has served as convention manager and secretary to the program committee.

ASIDE FROM THE PROGRAM of serious moment, Dr. L. E. Young, vice president, The Pittsburgh Coal Company, has arranged for a special program for the



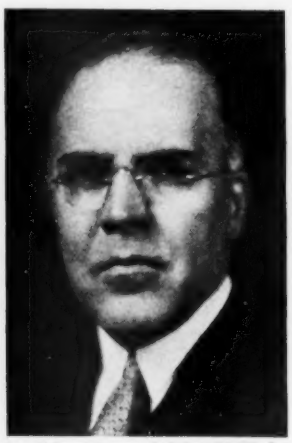
H. A. Treadwell

E. J. Newbaker



W. J. Jenkins

Geo. W. St. Clair



Newell G. Alford

W. P. Vance

Wm. P. Cayton

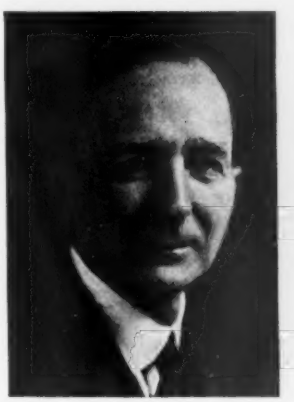
C. F. Richardson

J. S. McKeever

J. T. Parker

happiness and convenience of the delegates. Dr. Young has also arranged for a welcoming committee of 25 Pittsburgh operators who will look after the personal needs of each guest. Outstanding in the entertainment program is the annual dinner and dance to be held Thursday night at the William Penn Hotel. For Tuesday night an exhibitor's party has been scheduled, which will be known as "An Evening in Old Heidelburg With Our Gang." A special reception has been arranged Monday night for J. B. Warriner, president, The American Mining Congress; R. L. Ireland, chairman, the Coal Division; L. N. Thomas, chairman, the program committee; and Ralph Becker, chairman, The Manufacturer's Division. Besides this a special moving picture will be shown, a golf tournament will be held at one of Pittsburgh's golf clubs, a prize contest will be held with awards made at the annual dinner, and trips to places of interest around the Pittsburgh Coal Field are scheduled.

L. C. Skeen



Geo. F. Osler

Otto Herres

T. J. Thomas

R. Y. Williams

RALPH C. BECKER,
Chairman
Manufacturers Section of the Coal Division, The American Mining Congress

THE TENTH ANNUAL EXPOSITION of Coal Mining Equipment and Machinery will again be held in conjunction with the convention. Headquarters for the exposition will also be the William Penn Hotel. This exposition, which last year amounted to over half a million pounds of equipment, will show everything from helmets and roller bearings to mine cars and loading machines.

The industry will turn out en masse to the great efforts of the program and exposition committees. The dates are May 8 to 12, inclusive; the place, the William Penn Hotel, headquarters for both the convention and the exposition; the sponsoring organization, the American Mining Congress.

The program committee is composed of the following gentlemen:

National Chairman

L. N. Thomas, vice president and general manager, The Carbon Fuel Company.

WESTERN PENNSYLVANIA, NORTHERN WEST VIRGINIA, OHIO DISTRICT

J. Wm. Wetter, *chairman;* M. D. Cooper, W. P. Vance, E. J. Newbaker, T. R. Johns, C. M. Lingle, Geo. F. Osler, N. G. Alford, G. W. Shillingford, E. W. Judy, Jas. M. Cook, A. L. Hunt, L. E. Young, Thos. G. Fear, J. Pursglove, Jr., R. V. Clay, Wm. P. Cayton, W. L. Robison, W. S. Leckie.

ILLINOIS-INDIANA DISTRICT

C. J. Sandoe, *chairman;* H. A. Treadwell, Carl T. Hayden, Geo. F. Campbell, F. S. Pfahler, T. J. Thomas, Paul Weir, G. C. McFadden, H. H. Taylor, Jr., W. J. Jenkins.

SOUTHERN WEST VIRGINIA DISTRICT

H. B. Husband, *chairman;* C. W. Connor, H. D. Smith, P. C. Graney, R. H. Morris, C. B. Smith, T. C. Weeks, T. H. Clagett, J. S. McKeever, Wm. W. Miller.

VIRGINIA, KENTUCKY, TENNESSEE DISTRICT

Harry LaViers, *chairman;* Jos. L. Osler, Lee Long, J. D. Rogers, Geo. W. St. Clair, W. J. Borries, L. C. Skeen, C. F. Richardson, J. T. Parker, C. A. Griffith.

SOUTHERN DISTRICT

Carl McFarlin, C. E. Abbott.

WEST CENTRAL DISTRICT

L. Russell Kelce, *chairman;* K. A. Spencer.

FAR WEST DISTRICT

Gomer Reese, *chairman;* Geo. H. Rupp, Geo. B. Pryde, Otto Herres.

ANTHRACITE DISTRICT

A. B. Jessup, *chairman;* C. A. Gibbons, B. H. Stockett, A. M. Fine, R. Y. Williams, T. D. Lewis.

JOHN T. RYAN
First Vice Chairman
Manufacturers Section

GEO. R. DELAMATER
Second Vice Chairman
Manufacturers Section

C. B. OFFICER
Third Vice Chairman
Manufacturers Section

L. W. SHUGG
Director of Exhibits
Courtesy Gen. Electric Co.

THE FOLLOWING pages give a brief description of what exhibitors will present:

AMERICAN AIR FILTERS CO.—No description available.

AMERICAN STEEL & WIRE COMPANY will display a complete line of their Special Mines Ropes, Tramways, Rail Bonds and accessories, Electrical Wires and Cables, including Mining Machine, Shovel and Bore Hole Cables, Cords and Trouble Light assemblies. A feature of the Exhibit will be a demonstration of the "Fiege Tiger Claw" Wire Rope Fittings and Rail Bond Appliances.

ATLAS POWDER COMPANY will feature Atlas Blakstix, a new low explosive of the Black Powder type. By a new method of processing, there is produced in this Powder an aerated conditioned which causes a pressure development favorable for the production of lump coal.

BLAW-KNOX COMPANY, in booth No. 621, will feature a photographic display of the Blaw-Knox Deduster, together with samples of both raw and dedusted materials.

THE BROWN COMPANY will show the Bermico Fibre Mine Pipe. This pipe is composed of tough fibre impregnated with a special bituminous compound, and is joined together with special threaded Acid Resisting Couplings. Outstanding features of Bermico Pipe are: Ease of installation and handling, non-corrosive, a non-conductor of electricity, light weight, full delivery capacity with less friction loss.

THE BROWN-FAYRO CO.—No description available.

CHICAGO PNEUMATIC TOOL COMPANY will exhibit a complete line of electric and pneumatic coal drills of the mounted and portable types with permissible and open motors. They will also show a variety of electric and pneumatic shop drills, nut reamers, grinders and hammers for mine maintenance and general repair work. In addition to this class of equipment, they will have a pneumatic sump pump.

H. CHILDS & COMPANY, INC., in Booth No. 117, shows a line of Work Shoes and Rubber Pacs for Miners that provide maximum toe protection, combined with comfort. The leather shoes are built with heavy gage steel toe boxes of particular design that may be taken from the shoe if necessary.

COAL MINING will exhibit current issues of the publication *Coal Mining.*

COLONIAL SUPPLY CO. will show the COLONIAL Approved One-Man COAL DRILL; the ACE-O-PAX, a semi-metallic plastic packing; POWELL VALVES; S. K. F. BALL and ROLLER BEARINGS; CHISHOLM-MOORE MATERIAL HANDLING EQUIPMENT (hoists); and the MILFORD HACK and BAND SAW BLADES.

COAL TREATING EQUIPMENT COMPANY.—No description available.

CONCORDIA ELECTRIC COMPANY exhibit will include various types of electric miner lamps, cap lamps, hand lamps, and trip lamps.

THE DEMING COMPANY, in Space No. 617, will show the latest types of mine pumps with parts of acid-resisting alloys, and will have a 6-inch turbine in actual operation. In addition, there will be a 12-gallon-per-minute Coal Spraying Outfit for treating coal at mine or yard.

E. I. DU PONT DE NEMOURS & CO., INC.—No description available.

EDISON STORAGE BATTERY COMPANY, showing the new Edison "C" type cell which was developed to meet the increasing demand for large capacity batteries, and the Edison Storage Battery Division of Thomas A. Edison, Inc., has added to its list of cells in regular production cells of this type ranging in ampere hour capacity from the C4 at 225 ampere hours to the C12 at 675 ampere hours.

THE ELECTRIC RAILWAY EQUIPMENT CO. will show a complete line of Overhead Trolley Line Equipment, consisting of insulated trolley hangers of every description, all of which utilize recent development of a superior moulded insulation particularly suitable for mine conditions. In addition, there will be a complete line of malleable iron and bronze trolley fittings

with all of the late developments for supporting both trolley and feeder wires from one insulated hanger support.

There will also be on exhibit a 10-ton Testing Machine to demonstrate the physical strength of their line of moulded products.

THE ELECTRIC RAILWAY IMPROVEMENT CO. will exhibit the usual complete line of rail bonds for application by the steel electrode welding process and the copper electrode welding process. They will also exhibit a type of welding rheostat which is giving exceptional service under mining conditions.

FAIRMONT MINING MACHINERY CO. display will consist of photographs and blueprints describing Fairmont Tipples, Peale-Davis Cleaning Plants, and other equipment of Fairmont manufacture. Literature describing various equipment will be available.

FLOOD CITY BRASS & ELECTRIC CO.—No description available.

GENERAL ELECTRIC COMPANY will exhibit power factor control apparatus and a cutaway gear motor. In addition, there will be a "House of Magic" demonstration, presenting some of the wonders of advanced science and novel feats of magic.

GENERAL STEEL CASTINGS CORPORATION exhibit will consist of one cast steel one-piece mine car bottom, one of an order recently received from a large Pocahontas coal operator for one of their Virginia mines. The cars, of which these castings will form a part, are said to have the greatest capacity of any cars ever placed in underground service, as they will carry 213 cubic feet level full, and with a 12-inch heap, 277 cubic feet.

GOODMAN MANUFACTURING CO. booth will display large pictures of their modern machines and will have bulletins and photographs of their latest designs available for inspection. There will also be a few small parts included in this exhibit.

HENDRICK MANUFACTURING CO. exhibit will show flanged lip screens with short slot and standard long slot types. They will also have a power testing machine and small hand testing outfit. In addition, there will be a perforated elevator bucket.

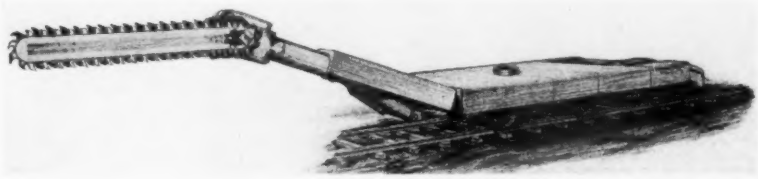
HERCULES POWDER COMPANY exhibit will consist of an unique animated display of Hercoal and Red H permissibles. The booth will be decorated in striking modernistic design.

HULBURT OIL & GREASE COMPANY exhibit will consist of a full line of HULBURT QUALITY GREASE specifically adapted to coal mining conditions. Also descriptive matter showing savings produced by modern application of quality lubricants.

HYDROTATOR COMPANY exhibit will consist of a working model of the Air-Sand separator. This separator will be a three-compartment machine and a replica of their large Air-Sand separators. Actual separation of refuse from coal will be demonstrated in this machine by a positive float-and-sink separation in a dry fluid of aerated sand.

THE JEFFREY MANUFACTURING CO. exhibit will be confined to a display of recent developments in mining machine and locomotive parts, with the background of photographic enlargements of the various unit equipments.

JOY BROTHERS, INC., exhibit will consist of the new Type 6-A Track Mounted Coal Saw. This machine embodies many new and unique features. It has an over-all height of 27 inches and is suitable for use in narrow entries yet has a range that permits sawing, from its position on the track, room faces 25 feet in width.



KOPPERS - RHEOLAVEUR COMPANY exhibit consists of an illuminated, moving diagram of a typical Rheolaveur coal cleaning plant showing the flow of materials and the principles utilized in the separation of impurities from raw coal. A display of over 150 photographs and flow sheets exemplifies outstanding Rheolaveur plants operating on both Anthracite and Bituminous coals as well as installations of the Carpenter Centrifugal Drier, The Birtley Deduster, and the Waring Dust Collector. Moving pictures of going Rheolaveur plants are also exhibited.

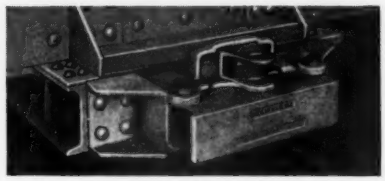
LEHIGH SAFETY SHOE COMPANY will show a complete line of Safety Shoes in both leather and rubber footwear.

A. LESCHEN & SONS ROPE COMPANY exhibit will consist principally of a complete line of samples of the different types and constructions of wire rope which this company manufactures for the mining industry.

LINK-BELT CO. exhibit will include colored photographs of some of the most recent cleaning plants and tipples completed by this company, particularly in the plants in the Pittsburgh district; a working model of the Simon-Carves Washing System, and motion pictures of this system in animated form as well as methods and equipment used in dirt excavating and handling in Mississippi River Levee building. Mr. E. J. Burnell, sales manager, will be in charge of the exhibit.

McGRAW-HILL CATALOG AND DIRECTORY COMPANY, INC., exhibit will display current issues of *Coal Age*, *Coal Mining Catalogs*, and *Keystone Directory for Coal Buyers*.

MECO, INC., exhibit will include two sections of MECO Demountable Troughed Belt Underground Conveyor, an Air Inbye Auxiliary Fan, and a Meco Chock Release.



W. H. MINER, INC., exhibit in booth 625 will consist of one full size model and two small models of MINER Draft and Buffer carrier.

MINE SAFETY APPLIANCES COMPANY will exhibit in their booth No. 219 the latest and most approved types of Edison Electric Cap Lamps, Gas Masks, Recorders, Breathing Apparatus, Skullgards, First Aid Materials, and other similar equipment.

Of special interest will be the new M S A Gas Indicator developed primarily for use in and around coal mines, and a new light weight skullgard to be known as the Type D Skullgard.

THE MINING CONGRESS JOURNAL booth will display the various publications sponsored by the American Mining Congress, and in addition will furnish information on coal mine modernization and other activities of the organization.

NATIONAL CARBON CO. display in booths Nos. 300 and 301 will include a general exhibit of the products of the various units of Union Carbide and Carbon Corporation, represented by the following well-known companies: National Carbon Co., Inc., Union Carbide Company, The Linde Air Products Company, and The Oxweld Acetylene Company. A large lighted display made in relief with replicas of the plants of the various units of the corporation will form the central feature of the exhibit. In the foreground of this central display are a cross-section of a cottage and a typical factory building in which will be shown the application and uses of the products made by the various companies of the corporation. This scene in action display will prove very interesting and instructive.

NIAGARA CONCRETE MIXER CO. No description available.

OHIO BRASS COMPANY will devote the major portion of their display to the new and improved types of safety and control devices such as hand-operated

J. B. WARRINER
President
The American Mining Congress

J. F. CALLBREATH
Secretary
The American Mining Congress

and automatic motor starters for conveyors, loaders, pumps, fans, etc., safety switches, circuit breakers, and fused trolley taps. These devices are to be mounted on panel boards in operative positions.

There will also be on exhibition a complete line of locomotive current collectors, headlights, and resistances, as well as overhead line materials and rail bonds. The rail bond display will be of particular interest because of the new short-welded bonds for base of rail application which are to be shown for the first time.

OLIVER UNITED FILTERS, INC.—No description available.

PENN MACHINE COMPANY exhibit will consist of EVERLAST Rail Bonds, Standard Replacement Parts for Mining Machines and Mine Locomotives, Centrifugal Pump Impellers, and Gears and Pinions, and S K F Ball Bearings.

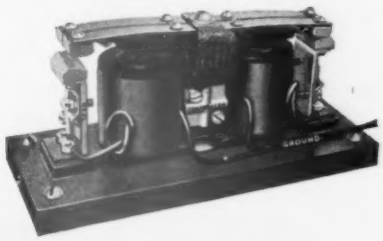
PENNSYLVANIA & W. VA. MINE SUPPLY CO.—No description available.

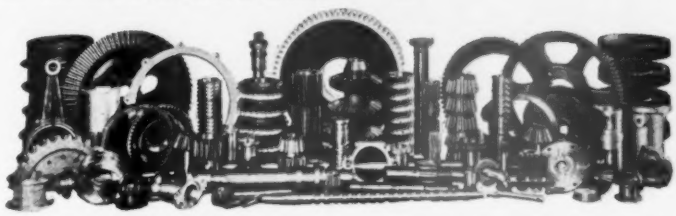
PENNSYLVANIA ELECTRIC REPAIR CO.—No description available.

PHILLIPS MILL & MINE SUPPLY COMPANY booth will not display equipment, but there will be an attendant to discuss mining problems with the coal operators.

PORTABLE LAMP & EQUIPMENT CO.—No description available.

THE POST-GLOVER ELECTRIC CO., in booth No. 100-A, will display P-G Steel resistance Grids designed for use with electric locomotives and mining machines, P-G Starters for use with mine pumps, fans, and other similar services, and P-G Transfer Switches for automatic switching on gathering locomotive service.





ROBERTS & SCHAEFER COMPANY exhibit will include a full size Stump Air-Flow Coal Cleaning unit. This will not be in operation but it will have embodied in it all of the latest improvements for this machine. A full size Ro-Sieve Screen will be shown, and the exhibit will also include photographs of plants and samples of coal blocks made in a bloxing machine.

ROBINS CONVEYING BELT COMPANY exhibit will show a Robins Anti-Friction Troughing Idler; a model section of a sectional mine conveyor; a model of the Robins Belt Trainer, and a number of enlarged photographs.

ROBINSON VENTILATING COMPANY.—No description available.

JOHN A. ROEBLING'S SONS COMPANY exhibit will consist of a show case indirectly lighted and the panels on the inside of the case will contain samples of all the products manufactured by them for the coal industry.

SAFETY FIRST SUPPLY COMPANY exhibit will include safety shoes,

(*Continued on page* 49)

MODERN MINING PRACTICE

A "New Deal" in Coal Drying

by

J. F. MITCHELL*

DURING THE PAST YEAR an important new development occurred in the method for wet preparation of coal. This step is the successful use of a new type of heat-drying of washed coal screenings; this took place in the plants of the Sherwood Templeton Coal Company and the Central Indiana Coal Company at Linton, Ind.

The problem presented in drying coal at Linton is both technical and economic since it combines the reduction of moisture in the final product at a reasonable expense with the drying of the product to increase thereby the sales demand. This dried product enters the domestic fuel market as a mixture of undried 1¼ in. by ¾ in. and dried ¾ in. by 0 in. The latter portion is dried to about 4 percent free water content and the mixture as shipped contains between 6 percent and 7 percent free water.

TO OBTAIN THIS RESULT dryers of the "D-L-O" type were selected and installed in the washeries at the Friar Tuck Mine of the Sherwood Templeton Coal Company, and the Allendale Mine of the Central Indiana Coal Company. The D-L-O dryer operates on the principle of a straight-line horizontal traveling carrier, upon which the wet coal is fed continuously, thereby forming a layer or bed of desired thickness. By the forward travel of the carrier the bed of wet coal is passed through a hot air-hood and subjected to suction from a rotary fan. This suction draws hot air from the stoker through the bed of wet coal on the carrier at the rate of 200 to 400 cu. ft. per minute per square foot of bed area.

Temperatures are controlled automatically at predetermined degrees so that overheating or burning does not occur. Any properly designed automatic stoker is well suited to supply the required heated gases for drying.

After passing through the bed of coal the hot gases issue from the fan-discharge, saturated with moisture and at temperatures around 123° F. The water removed from the coal is partly removed in this manner and partly by mechanical entrainment caused by the sweeping action of air-current passing through the bed of coal. This mechanically removed water drains through the screen support of the bed into the lower wind-box beneath the carrier mechanism and thence out to waste.

THE MOVEMENT of the coal carrier in the drying operation is smooth and no breakage of coal occurs from shock, speed or vibration, which prevents loss of quality by degradation in the size of coal during the drying. It should be stated here that marketing considerations are the only limit of final moisture content in coal from the D-L-O dryer; if conditions require, the moisture may be wholly removed or only to such a proportion as may be found desirable.

There are four main adjustments possible on the D-L-O dryer, which are:

1. Speed of travel.
2. Heat of incoming gases.
3. Volume of gases drawn through the dryer.
4. Thickness of the bed of wet material on the dryer.

This makes a very flexible arrangement which will meet suitably the fluctuations in hourly tonnage, varying percentages of incoming moisture and when occurring, the variations in the physical state of material being dried.

While the advantage of water removal in drying is shown in several respects under varying conditions, the following are recognized in the cases described herein. Removing a part of the excess moisture from washed coal gives a uniform evenly dampened dustless coal and while not subject to freezing, retains enough moisture to be ideal for power combustion. Prior to this installation, the best known method of handling washed coal consisted in allowing the cars loaded with wet coal to drip for 24 hours and then treating them with calcium chloride to prevent freezing. This method does not permit accurate technique, "tight" cars retained an undue amount of moisture even after 24 hours; it was hard to distribute properly the calcium chloride and also hard to prevent freezing before adding the calcium chloride.

REFERRING TO TYPICAL operating data on the two dryer installations mentioned the product dried is washed, screened bituminous coal through ¾-in, round hole screens and the free moisture content in this coal going to the dryer is about 12 percent. This is dried to about 4 percent free moisture and then mixed with wet 1¼ in. by ¾ in. so that free moisture as shipped is about 6 or 7 percent; the dry tonnage handled in each case is about 70 tons per hour. Length of time during drying period (or exposure to heated gases), is about one-half minute.

In case of one of the two dryers the fuel used by the automatic stoker is its own dried product—¾ in. by 0 in. with 4 percent free water and at 150° F. temperature, while in the other it is the undried 1¼ in. by 0 in. with 12 percent free water at the temperature of water in the washery. As the amount of coal burned is only about 1,000 lbs. per hour these two fuels cause little variation in volume of heated air required. The rotary exhaust-fans used develop a vacuum of 3½-in. water column in the windbox above the bed of coal in the dryer while in the air duct between the lower surface of the bed of coal and the fan there is a vacuum of 4½-in. water column.

Power consumed by the two exhaust fans varies from 39 to 45 hp., depending on variable r. p. m. of fan, which, in turn is a function of the volume of gases handled; these are likewise influenced by the degree of saturation in the air drawn through the stoker before reaching the dryer.

ALTHOUGH THE TRAVELING BED on which the coal is carried through the D-L-O dryer is of woven wire screen of suitable mesh, the amount of fine coal passing through the wire cloth is negligible and that which does pass through is drained out through the water seal in the lower wind box along with the mechanically removed water.

In general, the significant cost factors for this drying method summarize as follows for the 70 tons per hour unit:

Power—

Exhaust fan motor—using about 40 to 45 electrical hp.

D-L-O dryer motor—5 hp.

Stoker drive motor—1 hp.

Stoker blower motor—5 hp.

The latter three consume about 7 electrical hp.

Labor—Full time for one attendant.

Material—

Fuel—About 1,000 lbs. per hour.

Repair items limited practically to renewal of wire mesh screen which will have very long life, not yet determinable, when using stainless steel or monel metal.

* *Oliver United Filters, Inc.*

Aside from the wire mesh cloth, the balance of the equipment is substantial construction and not subject to destruction through operation. The usual 10 percent yearly depreciation on equipment, from the arbitrary standpoint of obsolescence within a 10-year period, is the only practical basis for depreciation charges on the rest of the material in the dryer.

FROM ANY ANGLE the economic advantage of this type of dryer is very plain under the conditions outlined at the two properties mentioned herein. Accumulated experience with the machine leads to the conviction that its use may be extended in the economical drying of both the smaller and larger sizes of coal by suitable combination of the same and the drying of this mixed wet product before screening. The limitations on this extension of its use have not yet been established.

■ ■ ■

Research in Coal

Digest of Article in "Coal Age," February, 1933

LARGEST OF THE DEVELOPMENTS in research during 1932 was the decision of the Research Section of the National Coal Association, under the chairmanship of John C. Cosgrove, to open a laboratory for the study of coal problems. This new organization, to be known as Bituminous Coal Research, Inc., will center its initial efforts on development of equipment and methods to hold and broaden the market for coal as a fuel.

Studies have been made by the Bureau of Mines into the value of soot-remover compounds for cleaning flues and chimneys. In this investigation, it was found that certain chemical compounds cause soot to burn at temperatures lower than normal, but whether such compounds are of any practical value to the householder is open to question, it is said. The best of the compounds was found to be cupric chloride, with chlorides of the elements lead, tin, zinc, calcium and sodium in the order named. The relation of clinker formation to the softening temperatures of the ash proved quite elusive. In general, ashes with large quantities of alumina and silica as compared to bases have high softening temperatures, but no close relation between these ratios can be determined. The iron content of very refractory ashes is relatively low, but in general, the relation of ferric-oxide content to softening temperatures is indefinite.

As regards the conflict between gas and coal, the heating of two identical school buildings in Fayetteville, Ark., one burning natural gas controlled automatically and one heated by hand-fired coal, was investigated by L. C. Price, research associate professor of mechanical engineering, University of Arkansas. He found that 21,000 cubic feet of gas was equivalent to a ton of coal, which would show that, under the conditions of burning, the gas furnace gave a higher efficiency per unit of heat supplied than the coal furnace. But neither of the furnaces is described nor is the heat equivalent of the coal used specified.

Burning bituminous coal in a typical hand-fired hot-water heating plant, the State College of Washington found 27.1 percent of the heat lost was due to the sensible heat of the furnace gases; with a typical stoker-fired hot-water heating plant, 28 percent of the heat was lost in that manner; with a specially designed stoker-fired hot-water heater, with a clean heat exchanger and a slow rate of feed, it was only 10.84 percent, though with medium rate of feed it was 16.35 percent, and with the same rate of feed and a dirty heat exchanger it was 23.60 percent.

Summarizing, the college declares that with hand-firing, and poorly designed heating plants only, 30 to 40 percent of the heat in coal ordinarily finds its way into the house. Automatic stoking raises this efficiency approximately 15 percent, and with an economizer 16 percent more was saved, so that under normal operation a 78 percent efficiency is attained. With oil at 8½ cents a gallon and coal at $8.50 a ton, the extra cost of heating a residence with oil as compared with stoker-fired coal in a typical heating plant is 88½ percent.

In its studies of the relative value of coal and by-product coke, the Anthracite Institute found that, as compared with coke, a more even heat output, needed half as much manual attention, absorbed only 28 percent as much water, demanded half as much storage and furnace space, produced more heat with a given draft, was more efficient at mid-season demands, though less economical at lower ratings, could be banked twice as long and, with identical drafts, required only three more minutes to reach maximum output from a cold start.

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Competitive Relation of Coal and Petroleum in the United States

Digest of paper by W. Spencer Hutchinson, Cambridge, Mass., and August J. Breitenstein, Ashland, Pa., before New York Meeting of A. I. M. & M. E., February, 1933

THE OUTSTANDING engineering accomplishment of the last three decades has been the development and application of more and cheaper power and its use instead of the labor of men and animals. Substitution of power for manual labor has taken effect on every hand in the United States. With the aid of energy mechanically available to his hand, one man does the work that only a few years ago required two, three, or even a greater number of laborers.

The chief sources of energy today are the mineral fuels, coal and petroleum. In the United States they yield more than 90 percent of the total energy demand. Thirty years ago the proportion of energy supplied by the mineral fuels was likewise above 90 percent, but the division according to origin was very different. These relations are shown for the years 1900, 1930, and 1950 in Table I.

Table I—Derivation of Energy in the United States

	Allocation of total energy derived, percent		
Sources	1900	1930	*Forecast* 1950
Coal—bituminous and anthracite	91.3	60.3	46.6
Petroleum and its products, including also natural gas and natural-gas gasoline	4.3	31.6	45.3
Hydro-power	4.4	8.1	8.1
Total	100.0	100.0	100.0

In order to compare and interpret the significance of the consumption of the different fuels, a common unit of measurement is required. Not all can be expressed in tons or barrels or volume, and recourse was accordingly had to the energy derivable, which has been determined according to efficiency of use of the respective fuels, both with relation to time and according to character of use. No record has been found of any previous attempt to forecast energy demand of the United States based on "effective" energy utilized and derived from the fuel consumed, and other sources.

■ ■ ■

Mine Explosions and Fires in the United States During Fiscal Year Which Ended June 30, 1932

Digest of paper by D. Harrington, United States Bureau of Mines, January, 1933

PROBABLY THE MOST significantly encouraging fact brought out by the study of explosions and fires in the mines of the United States during the fiscal year 1931-32 is that explosions of electrical origin cost the lives of but 11 persons, against an average of 137 annually for the past five years; moreover, it is distinctly encouraging to note that in the past fiscal year but 12.7 percent of those killed in explosions in the mines of the United States were killed in explosions of electrical origin as against an average of 69.4 percent (or nearly 70 percent) annually for the past five years, this percentage being 82.5 for the fiscal year 1927-28. Evidently the electrical installations are now being made more

carefully, or safer equipment is being placed and maintained, or ventilation is being handled more carefully than in the past; possibly all of these factors are responsible to some extent. In addition, there are other influences, an important one being more intensive supervision and inspection of electrical equipment in mines. During the past fiscal year at least three explosions of electrical origin were prevented by rock-dust from extending or propagating; it is entirely probable that if rock-dusting had not been done in those mines or the dust had not been in effective working condition, the death list from the three explosions would have been in excess of 300, as the amounts of natural gas and dust present were such as to aid in the extension of an explosion.

The bituminous properties of Pennsylvania, comprising more than 1,300 mines with over 125,000 employed, continue to have a wonderful record as to the avoidance of major explosions, there having been no major explosion disaster in a bituminous mine in Pennsylvania from March 21, 1929, to date of writing this paper (November 10, 1932), or for nearly 3 2/3 years, a record of which all persons in bituminous coal mining may well be proud. The anthracite mines of Pennsylvania with their intricate and extensive workings, numerous hazardous conditions, and employment of about 150,000 persons have not had a major explosion since May 29, 1931, or practically 1½ years, also a noteworthy achievement. West Virginia with its approximately 100,000 employes and its more than 800 mines, many of them with decidedly hazardous conditions as to gas and dust, has operated since November 3, 1931, or over a year without a major explosion; and numerous other states have in recent years established safety records (including avoidance of loss of life by explosions and fires) which would have been considered absolutely impossible as late as 10 years ago.

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Mining Under Caved Areas

Digest of Paper by F. S. McNicholas in "Engineering and Mining Journal," March, 1933

A METHOD OF MINING PILLARS surrounded by caved waste, and stope bottoms covered by waste, has been developed at the Hidden Creek mine of the Granby Consolidated Mining, Smelting & Power Company, at Anyox, B. C. The reader should note that pillars left in large ore bodies are from 40 to 60 ft. thick and permit rather large openings to be made in them.

For mining vertical pillars surrounded by caved waste a 7 by 12-ft. muck raise is driven in the pillar and along the footwall of the ore, to the top of the pillar. Near the top of the raise an inclined "long slope" stope, about 20 ft. wide, is driven in the pillar parallel to it and toward the hanging wall. This stope makes contact with a hanging-wall or other manway raise and continues to the top of the pillar, but does not break through into the surrounding caved waste. The stope is then either slabbed down from the back, or benched once to give a stope 20 ft. high.

The next stope is then started 30 ft. below this and parallel to it, and is driven in the same manner. After contact is made with the manway, the back of the upper stope is drilled with 20-ft. holes which are blasted electrically and all at the same time and the resulting broken ore is drawn. The lower stope serves as a manway to the draw point so that the broken material may be bull-dozed, plugged and drawn. When the muck begins to run low in grade, large boulders are allowed to remain in the neck of the raise above the draw point and effectively cut off further flow of waste. At the top of the second stope muck holes are driven to draw any ore that has not been drawn through the footwall raise.

The same process is repeated until the entire pillar is mined.

In mining bottoms under old stopes filled with caved waste the procedure is similar; either a footwall raise or a tight spiral raise is driven through the area to be mined. If a footwall raise is used, manways to the draw points must be supplied. If a tight spiral raise can be used, no additional manway is needed, because broken material will draw down the inside of the spiral, leaving a manway around the periphery of the spiral.

Near the top of the area to be mined a stope is cut out, about 20 ft. high, leaving a 25-ft. back between the stope and the caved waste. A stope is then cut out about 30 ft. below the first one, the original raise being left unenlarged between the stopes. This gives a "bottle neck" below each stope, which may be choked almost at will to cut off the flow of the waste. The under stope furnishes a safe entry and working place for bulldozing and plugging of broken material.

Then the upper stope is drilled with 20-ft. holes and blasted in one simultaneous blast electrically. Broken material is drawn until it runs low in grade, when it is choked by allowing big boulders to remain in the bottle neck of the raise. In the second stope and the subsequent stopes, muck holes are broken through to the caved material and drawn until they run waste before the stope is blasted. Similar procedure continues from the top downward until the entire area is mined.

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Mining Methods and Costs at the Washington Mine of the Alan Wood Mining Company

Digest of Paper by C. H. Loux, Superintendent, Oxford Division, Alan Wood Mining Company, at A. I. M. & M. E. Meeting, February, 1933

THE WASHINGTON MINE is on Jonestown Hill, one mile south of Oxford, in northwestern New Jersey. It is producing 16,000 tons of concentrates a month, which are being shipped to the Alan Wood Steel Company's furnaces at Swedeland, Pennsylvania.

These veins, like most eastern deposits of magnetite, are formed from, or are contemporaneous with, pegmatite intrusions into a gneissic country rock. The ore therefore follows the banded structure of the gneiss producing more or less lenticular shaped veins. The gneiss is usually fine grained, with bands of pink spar, accompanied by small amounts of hornblende and biotite. The ore is coarse, granular, massive magnetite, of metamorphic origin, containing primary apatite, quartz, pyrrhotite and actinolite in varying amounts, with some secondary pyrite and calcite. The principal impurities are apatite and quartz, aggregating approximately 10 percent with about 2 percent of sulphur in the form of pyrite. In the Washington vein the orebody strikes N. 25° W. The dip to the east is 69° in the upper levels and gradually flattens to 45° in the lower levels. The orebody pitches to the south at an angle of about 50°.

Haulage levels are driven on line in rock, approximately 20 ft. in the foot-wall and 200 ft. apart along the dip. Manway raises connect these levels at each end of the orebody. Three sublevels, the entire length of the level, connect with the manway raises. The first sublevel is 30 ft. above the haulage drift, the next 120 ft. above and the last 170 ft. above; all are in ore and driven along the footwall. Chute-raises are on 80-ft. centers in rock and are coned out for storage and for grizzly chambers. These chambers connect with the lowest sublevel at its central point with a short crosscut. From both ends of the grizzly chambers, raises are run at 45° until they connect. These raises break through the footwall into ore on the second round, and then follow the footwall in ore. Connecting raises are also driven over each grizzly chamber in ore, and the whole stope is coned out and undercut to the hanging wall, leaving grizzly chambers with drawing points at each end.

A raise is then driven from the back of the central connecting raise to the level above, and undercut from foot to hanging as far as the upper sublevel. Benches are cut at the intersection of the sublevels with this central raise, from foot to hanging. The benches are about 10 ft. wide and mounted drifters are used to drill the rounds. In stoping, jack-hammers are used to drill vertical down holes in two rows across the bench to a depth of 10 ft. These holes are fired with electric delay fuses. As the benches are carried downward, men with equipment and materials have access along the flat footwall from the nearest sublevel above. The bench is carried down until it breaks through, when the process of side-wiping a new bench is repeated. The labor is

contracted; three drillers and a nipper make one crew and are paid on a "tonnage-broken" basis.

The main haulage drifts are 8 by 10 ft. in cross-section, enlarged slightly at the loading chutes. No timbering is needed. Drilling is done with wet machines, mounted on vertical bars. Two machines and two drillers average 5½ ft. advance per shift. Three men hand-muck this advance on the night shift. Both drillers and muckers are paid contract wages per foot of advance, powder and equipment being furnished by the company. A round generally consists of 24 holes, although the cut frequently requires more holes. A "burned" cut is the only satisfactory one for all rock.

Raises are 5 by 7 ft. Two drillers, using wet stopers, average 5 ft. advance per shift in both ore and rock. The labor is by contract, with materials and powder furnished. To make 5 ft. advance requires 20 holes in rock and 18 holes in ore.

Three types of machines are used. Ingersoll-Rand S-49 dry stopers, using unshanked 1-in. hollow hexagon steel are used for stoping. Most of these are equipped with feed-leg control valve. The same machines, with jackhammer front and back head, are used in the sublevel stopes and for blockholing. All jackhammers are dry machines using 1-in. shanked hollow hexagon steel. Gardner Denver Type 339 wet stopers, with unshanked 1-in. hollow hexagon steel, are used for all raises, and type 7 KL wet drifters, with 1¼-in. hollow round steel for all drifting and for undercutting the footwall in the thirteenth level stope.

About 11,000 pieces of steel are handled per month in an underground shop on the thirteenth level. Average steel breakage is 2.33 percent. Consumption of steel is 0.0493 lb. per ton of ore broken, and 2.24 lbs. per foot of advance on development.

Tracks are 24-in. gage, of 40-lb. rail. Automatic side-dump cars, of 70 cu. ft. capacity, hold about 5 tons. The improvement in chutes and equipment on the thirteenth level has greatly reduced the tramming cost, but it is still excessive, as compared to the tramming from the sublevel stopes. Six trammers on the thirteenth level tram 40 percent of the ore hoisted, while two men on the fourteenth level tram 60 percent, where the ore passes over the grizzlies before loading. In addition to these advantages, there is so little spillage under the new system that the levels are always clean.

Comparative Stoping and Tramming Costs, Percent

Costs made prior to 1929 *taken as* 100 *percent*

	Shrinkage stoping prior to 1929	*Shrinkage stoping prior to 1931*	*Sublevel stoping in 1931*	*Total stoping in 1931*
Labor	30.52	10.57	12.33	11.49
Drill sharpening	5.11	4.25	3.11	3.67
Power for drilling	20.31	11.95	8.22	9.98
Explosives	3.91	12.44	8.66	10.48
Blockholing in stopes and grizzlies	28.57	12.75	3.55	8.00
Miscellaneous	11.58	10.76	8.56	9.62
Total breaking cost	100.00	62.72	44.43	53.24
Tramming and loading at chutes	100.00	30.42	14.04	22.22
Actual tonnage broken per drill shift	31.3	69.0	92.0	82.5

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Soluble Metal Xanthates and Their Effect on Differential Flotation

Digest from paper by S. Power Warren, Metallurgical Engineer, Golden, Colo., in "The Canadian Mining and Metallurgical Bulletin," March, 1933

IT IS GENERALLY CONCEDED by flotation men that the condition at the surface of a particle of mineral or gangue is the most important factor controlling its behaviour in a flotation cell. Much research work has been devoted to the study of the forces that are active at the surface of the particle and of the effect of the surrounding solution upon these forces.

Study of the relationship between mineral or gangue particles and gas bubbles indicates that, in the main at least, flotation is a physical phenomenon. The important factor, that of mineral-gas-bubble attachment, is unquestionably physical; however, modifications may be effected by chemical means, whereby the nature either of the surface of the particle or of the surrounding solution may be changed. For example, the coating of lead sulphide that forms on lead-carbonate ore particles when sodium sulphide is added greatly aids the flotation of the carbonate particles.

Without going into the question as to why, under certain surface conditions, mineral particles will attach themselves to gas bubbles whereas under other conditions they will remain unaffected, it may be stated that there are three general conditions in a flotation pulp which control the attachment of the particle and the gas bubble. These conditions are:

1. Conditions favoring the precipitation of a water-repellent coat on or immediately surrounding the surface of a mineral particle, making it floatable. *Example:* a metal xanthate or sulphide precipitate.
2. Conditions favoring the precipitation of a water-avid coat on or immediately surrounding the surface of a mineral product, making it non-floatable. *Example:* a carbonate, hydrate, ferrocyanide, cyanide, chromate, etc.
3. Conditions favoring the solution of either a water-repellent or a water-avid coat on or immediately surrounding the mineral particle which neither retards nor accelerates the natural flotation rate. *Example:* sulphuric acid on pyrite-chalcopyrite or sphalerite.

The three conditions stated above will apply differently to each of the several kinds of mineral particles present in the pulp because of the different chemical behavior of the metals contained in the minerals considered.

When condition (1) applies to one mineral in the pulp and condition (2) applies to all the others that are present with it, a clean separation of this one mineral will be possible; but when condition (3) applies to some of them, they will hamper the clean separation. It is therefore desirable to have the first two conditions active to as great a degree as possible.

Flotation Control by Solubility of Metal Xanthates

CONCISELY STATED, the writer's conception of flotation control by the solubility of the metal xanthates is as follows:

1. Chemical conditions in a concentrating mill pulp which favor the precipitation of the xanthate of a metal contained in a mineral, will cause the mineral in question to become attached to the gas bubble more firmly than the original sulphide mineral, and consequently will accelerate its flotation rate.
2. Chemical conditions in a concentrating mill pulp which favor the solution of the xanthate of a metal contained in a mineral will prevent the acceleration of the natural flotation rate of the original sulphide mineral (1) and allow room on the surface of this mineral for other chemical reactions which will retard the flotation rate of the original sulphide mineral.

Practical experience, also, has convinced the writer that a mineral particle which is coated with the xanthate of one of its constituent metals, or which is immersed in a solution that favors the precipitation of the metal xanthate in question, is more resistant to wetting by water than the original sulphide under the same conditions of reagents in solution. It will therefore be more firmly attached to the gas bubbles and consequently will have a more rapid flotation rate than the original sulphide.

Conclusions

1. Investigation has shown that the xanthates of the heavy metals differ greatly from one another in their solu-

(*Continued on page* 47)

ASSOCIATION ACTIVITIES

Zinc Institute Holds Fifteenth Annual Meeting

THE FIFTEENTH annual meeting of the American Zinc Institute was held April 19 at the Hotel Commodore, New York City, about 65 members and their guests attending. Mr. Ralph M. Roosevelt, president of the Institute, presided as chairman.

The following members were unanimously elected as directors for a three-year term:

C. F. Dike, Interstate Zinc & Lead Co., Treece, Kans.
J. O. Elton, International Smelting Co., Salt Lake City, Utah.
Howard I. Young, American Zinc, Lead & Smelting Co., St. Louis, Mo.
Stanly A. Easton, Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho.
Julius W. Hegeler, Hegeler Zinc Co., Danville, Ill.
John A. McCarthy, United Metals Selling Co., New York City.
Jesse G. Starr, Quinton Spelter Co., Joplin, Mo.
Henry S. Wardner, New Jersey Zinc Co., New York City.
H. S. Wardner, of the New Jersey Zinc Company, was elected a vice president of the Institute, filling the vacancy created by the death of A. P. Cobb.
President Ralph M. Roosevelt and other officers were reelected.

Other reports were those by the traffic committee, a reading of the treasurer's report by Mr. Howard I. Young, and the secretary's report on developments relating to the activities of the Institute during the past year.

One of the interesting reports of the committee was that about 75 percent of the galvanized sheet manufacturers are operating under license agreement with the Institute for the production of "Seal of Quality" galvanized sheets in connection with which it was stated that considerable progress had been made in the distribution and consumption of this heavier coated sheet during the past 12 months.

Mr. A. E. Bendelari, president of Eagle Picher Lead Company, when called upon to make a few remarks, said that in his opinion zinc was on the up-grade, and others subscribed to the same sentiment. Mr. Roosevelt pointed out that it was the general consensus of the zinc trade that the market touched the bottom last July, 1932, and that like the beginning of the depression in zinc, it required a lapse of eight months before the trade in general fully realized that a change—for the better this time—had occurred in the zinc industry.

At the close a motion to commend the officers and staff of the Institute for excellent work during the past year was unanimously passed.

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MEANS FOR INCREASING the safety of the men who work in the mines will be discussed at a two-day session of the Mine Inspectors' Institute of America, to be held at the William Penn Hotel, May 15 and 16. Representatives of the mine inspection service, and a few entire state inspectorates, are expected at this meeting, which will lay broad plans for further safety, thus celebrating the twenty-fourth year of the Institute's history of achievement. The date of the meeting has been changed to accord with the changed date of the American Mining Congress, which now will meet May 8 to 11, and spend May 12 and 13 in visits to points of interest.

Thomas Moses, president, H. C. Frick Coke Company, is general chairman of the entertainment committee; J. T. Ryan, of Pittsburgh, is chairman of the program committee; C. A. McDowell, also of Pittsburgh, is secretary. Most of the delegates will be accompanied by their wives.

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THE INDIANA COAL Association has announced that their Annual Coal Convention will be held at Indianapolis, May 24 and 25.

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BECAUSE OF THE IMPORTANT bearing of international relationships upon business levels of the United States, leaders in many fields from all parts of the country are evidencing a more than ordinary interest in the Twentieth National Foreign Trade Convention which will be held in Pittsburgh on April 26, 27 and 28.

This convention is the largest and most important meeting devoted exclusively to foreign trade held annually in the United States. It is sponsored by the National Foreign Trade Council, which has a limited membership, but is attended by representatives of foreign trade interests from all parts of the United States and abroad. Despite present conditions, advance registrations indicate an attendance of more than 1,500 delegates.

Preparations for the convention are now being made by the general convention committee, the members of which are: J. Rogers Flannery, president of the Flannery Bolt Company, chairman; Howard Heinz, President of H. J. Heinz Company; George Gordon Crawford, president of Jones and Laughlin Steel Corporation; A. W. Robertson, chairman of the board, Westinghouse Electric and Manufacturing Company; H. S. Wherrett, president of the Pittsburgh Plate Glass Company; Joseph C. Trees, vice president of the Benedum-Trees Oil Company; H. H. Robertson, president of the H. H. Robertson Company, and V. J. Usher, manager of the foreign department of the Mellon National Bank of Pittsburgh.

The meeting is being held at the call of James A. Farrell, who is chairman of the National Foreign Trade Council and former president of the United States Steel Corporation.

In calling the convention, Mr. Farrell said:

> "American Foreign Traders have found in these years of trial and adversity that the level of our own prosperity bears a definite relation to the level reached in other countries. The revival of our international commerce, therefore, is one of the foundations on which our recovery must be built. The rate of decline in both our exports and our imports steadily diminished during the latter half of 1932. This is a tangible sign indicating that the world-wide depression has spent its force. It is a time that calls for careful consideration and for a thorough examination, in response to our present conditions, of the facts that underlie our foreign trade policy."

Many questions of world-wide importance will be brought before the present convention. Among the most significant will be the war debts, tariffs, depreciated currencies, and trade barriers.

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THE 21st ANNUAL MEETING of the United States Chamber of Commerce will be held in Washington, D. C., May 2 to 5, inclusive. The following foreword to their official announcement gives the purpose of the meeting.

> "This year's meeting comes at a time when the country is beset with economic difficulties. Business, buffeted through more than three years of world-wide economic depression, still faces a future of uncertainty. The government itself has already made headway with some of the problems which must be solved if the difficulties that check our economic advance are to be overcome. With sound solutions the country can look forward to a new period of progress.

(*Continued on page* 45)

HAVE YOU HEARD—?

THE COMMITTEE FOR THE NATION, representing three hundred industrial leaders has offered a five-point plan to restore prices in the United States. The plan proposes Government guarantee of deposits in unopened banks; places embargo on gold exports; revalue of gold to $36.17 an ounce and stabilization of general price levels at 100.

A NATIONAL advisory committee investigating conditions in the British steel industry recommends the creation of the "Iron and Steel Corporation of Great Britain" to control the industry through regional associations.

L. F. LOREE proposes far reaching measures in dealing with the railroad situation, calling for reduced passenger and freight rates; elimination of competitive waste; revision of working agreements with railroad labor; abandonment of unnecessary rail mileage; reduced taxes, and other items.

CHAIRMAN O'BRIEN, of the United States Tariff Commission, takes issue with Garet Garrett, in *The Saturday Evening Post*, stating that increases in imports to United States from countries off gold standard have been no greater than those from other countries. Mr. Garrett maintains that Great Britain and other countries which have abandoned gold standard are flooding the United States with cheap goods, thereby destroying American industry.

PROFESSOR JAMES H. ROGERS, head of Yale's Department of Economics, urges the Government to spend seven hundred millions monthly in a comprehensive plan for business revival, and invites Senate Finance Committee to hear his views.

GOVERNOR OLSON, Farmer-Labor governor of Minnesota, asks legislature to appropriate one million dollars to care for disabled war veterans to replace funds withdrawn under national economy act.

AMERICAN FEDERATION OF LABOR urges President Roosevelt to start large governmental public works program to reduce unemployment, and says that program should involve at least a billion dollars, if not, in fact, six times that amount. Urge enactment of the 30-hour week proposed legislation.

STATING THAT ONE of the difficulties of the lead industry is the fact that about 9,000 tons of lead is being returned in the form of old storage batteries and other scrap, C. H. Crane, president, the St. Louis Lead Company, told stockholders that in the first quarter of this year the company sold 10,835 tons of lead at an average price of 2.816 cents a pound. The company's zinc operations broke even during the quarter.

ACCORDING to the *International Coal Trade Situation*, issued by the Minerals Division, Department of Commerce, the proposal of the British Coal Utilization Council to impose a levy of 3d. or 6d. per long ton on production in aid of coal exports has been favorably received in South Wales. * * * The scheme is expected to raise over £5,500,000 a year and would permit a subsidy of over 2s. 6d. on each ton of coal exported.

GOLD PRODUCTION of the United States Smelting & Refining Company in 1932 exceeded best previous records of the company; 350,678 ounces were produced against 314,755 for 1931, and 322,968 for 1930. The company produced 439,711 tons of coal in 1932 against 546,188 and 710,960, respectively.

THE SOCIETY OF INDUSTRIAL ENGINEERS propose that the Government commandeer idle plants, mines and farms, and put them into operation by the unemployed under a national self-sustaining program.

ABANDONING the present plan of deferring 50 percent of salaries for future payment is planned by the Truscon Steel Company in favor of a plan to go into effect April 16 which will reduce salaries from 25 percent to 33 percent.

H. I. HARRIMAN, president of the United States Chamber of Commerce, believes Muscle Shoals bill uneconomical and destructive to private business already established in that district. Urges the Government to accept private operation of Muscle Shoals, under lease.

THE UTAH COPPER COMPANY report for the year ending December 31, 1932, shows a net loss of $2,469,704. In 1931 the company reported a profit of $2,027,149.

TWO EASTERN RAILROADS entered the market for steel rails, the first of such purchases they have made in, roughly, two years.

UNEMPLOYMENT: The Empire Steel Company, Mansfield, Ohio, have returned more than 1,000 men to positions within the company. This was possible because of large increases in demands from nearby automobile plants. The Greer Steel Company, Dover, Ohio, has stepped up production and are employing 140 men, which is only 30 men less than full capacity. More men will be employed at the Republic Steel Company, which has resumed melting at its Warren, Ohio, blast furnace after a month's idleness.

THE BRITISH BOARD OF TRADE reports imports in iron and steel during March to be 96,963 tons, and exports 154,971 tons.

ROBERT E. TALLY, president, United Verde Copper Company, advocates a revision of the anti-trust laws which "might be effective only during periods of subnormal prices." He believes that all agreements or understandings should be under the supervision of the Federal Trade Commission. He urged congressional action, and insisted that it be compulsory as there are many selfish producers who would let their competitors assume the burdens while they share benefits.

SENATOR KEY PITTMAN, of Nevada, declares that over half the people in the world have no money other than silver money. He advocates the passage of his bill to purchase silver produced in the United States at the world price, and the use of silver certificates to expand our currency about eight million dollars. He suggests that silver be taken in payment of international obligations due the United States.

PERSONALS

E. J. NEWBAKER, vice president, Berwind White Coal Mining Company, was in Washington April 15.

R. L. IRELAND, vice president, Hanna Coal Company, and chairman of the Coal Division, The American Mining Congress, attended the meeting of coal operators appearing before Secretary of Interior Ickes, in regard to the proposed coal control bill.

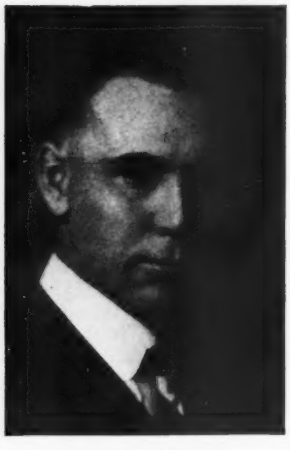
EUGENE MCAULIFFE, president, The Union Pacific Coal Company, stopped in Washington, en route to a meeting of the Board of Directors of the American Institute of Mining Engineers.

Eugene McAuliffe

N. W. RICE, president, the Utah Fuel Company, and vice president, the U. S. Smelting, Refining & Mining Company, of Boston, was in Washington on business during the month.

WALTER L. ROBISON, president, Youghiogheny & Ohio Coal Company, Cleveland, has been in the South on vacation.

ERNEST L. BAILEY, formerly with the Davis Coal & Coke Company, has been appointed state mine inspector for West Virginia.



R. C. Allen

R. C. ALLEN, of Oglebay Norton & Company, was in the East the latter part of April.

W. J. LORING, formerly president, Carson Hills Mining Company, is at the Hotel Phillips, Kansas City, Mo.

JAMES F. CALLBREATH and MRS CALLBREATH spent a short Easter vacation in the South.

WILLIAM LOEB, vice president of the American Smelting & Refining Company, has been confined to the hospital where he is recovering from a major operation.

GUY N. BJORGE, of the Homestake Mining Company, Lead, S. Dak., spent the early part of April in the Arizona mining districts, where he formerly was employed. Mr. Bjorge before going with the Homestake Company was a well known consulting engineer and for several years associate editor of THE MINING CONGRESS JOURNAL.

J. S. TRITLE, vice president and general manager of the Westinghouse Electric and Manufacturing Company, has announced the appointment of C. H. Champlain as general works manager of the company. In his new position Mr. Champlain will supervise the management and operation of the nation-wide plants of the Westinghouse Company.

DR. L. E. YOUNG, vice president, Pittsburgh Coal Company, made a tour of inspection of his company's properties and was a visitor of the properties of the Stonega Coke & Coal Company on April 21.

CARL SCHOLZ, consulting engineer, Charleston, W. Va., was in Washington for several days during the month.

Announcement has been received from the McGraw-Hill Catalog and Directory Company of New York of a change in the publishing plan for their Keystone Coal Buyers Catalog, which for years has been known among the trade as the authoritative reference work on coal and coal sources. The 1933 edition, just off the press, is known as the Keystone Directory for Coal Buyers. The publication features an up-to-date directory covering the active commercial coal mining companies with pertinent information on each of their operations. Data given includes name and address of the company, name of important sales officials and operating heads, official name of mine, shipping point and serving railroad, seam mined and thickness of seam, daily tonnage capacity, preparation methods in use, etc. The publishers announce that when up-to-date information on analyses and geological data can be secured from authoritative sources this type of matter will again be published. The user of the new directory will, however, find in the advertising section a mass of up-to-date and valuable data on the particular coals and facilities of many of the leading coal companies of the country. The new directory sells at $15 a copy and can be secured by writing to the publishers at 330 West Forty-second Street, New York.

Carl Scholz

Obituary

CHARLES W. CLARK, president of United Verde Copper Company, died at age of 61. He was a son of the late United States Senator William A. Clark, of Montana. Mr. Clark was also president of the Clark Holding Corporation and of the St. John & Ophir Railroad Company; general manager of the Verde Tunnel & Smelter Railroad Company, and a director of the Ophir Hill Consolidated Mining Company and of the Upper Verde Public Utilities Company.

WALTER STEVENS died at West Frankfort, Ill., on April 11. Mr. Stephens was well known in the coal fields of southern Illinois, West Virginia, and Kentucky. He sank several of the deep shafts in Franklin County, the last being for the Valier Coal Company, which mine he brought up to its record production of over 8,500 tons.

JOSEPH E. EDGEWORTH, mine superintendent for the Lion Coal Company, at Blairtown, passed away at the Wyoming General Hospital late Thursday night, April 6, as the result of injuries received in the new Star Mine of the company.

MODERN MINING EQUIPMENT

WHERE MECHANICAL means is required for reducing the normally high motor speed to satisfactory operating speeds, the new line of Type S Westinghouse gearmotors, made by the Westinghouse Electric & Manufacturing Company, of Pittsburgh, provides an extremely simple and compact unit for low operating speeds. This gearmotor is scarcely longer overall than a motor. Designed for drives from one-half to one-fifth horsepower and for 1,550 to 232 r. p. m., this advanced type of drive may be connected direct to the driven equipment or by cog-belts, chains, or flat belts. Fourteen reductions of ratios of 1.12:1 to 5.1 are available for each motor speed and horsepower. Changes in output speeds can be made readily at only a small percentage of the initial cost of the entire unit.

AT THE ANNUAL meeting of the stockholders, in Chicago, Evans Woollen was elected a director of Link-Belt Company for a term of three years. The following directors were reelected for the three-year term: George P. Torrence, president, Link-Belt Company; Alfred Kauffmann, vice president; and Henry F. Pope, president, National Malleable & Steel Castings Company, Cleveland.

SOMERS, FITLER & TODD CO., 325 Water Street, Pittsburgh, Pa., have been appointed distributors and direct representatives for the du Pont line of mine ventilation equipment which takes in du Pont ventube and du Pont brattice cloth. In this capacity they will be prepared to give assistance to their trade in the solution of auxiliary ventilation problems. They will carry a suitable stock of ventube and brattice cloth in the various diameters and will solicit the trade in the bituminous fields of western Pennsylvania, eastern Ohio, and northern West Virginia. This line was formerly handled by the Gellatly Company who recently sold out their business to another concern.

A NEW MOTOR BASE with scientifically designed sound-isolating features has been developed by the General Electric Company after an extensive study on the part of its research laboratory. Floating members are suspended on specially developed isolating material, so enclosed and mounted that long life and freedom from damage result. The motor is mounted as on a standard sliding base, and belt tension and motor alignment are maintained in the ordinary manner.

The Sullivan Rod Puller

THE SULLIVAN PNEUMATIC ROD PULLER has been devised to furnish a simple mechanical means of withdrawing diamond drill rods from down holes, when the drill is not equipped with a hoist. As shown, the puller consists of a cylinder and piston with a valve and pipe connections to permit compressed air to either side of the piston, as desired. To the other end of the piston rod is screwed a fork, and in this is loosely held at right angles, an arm carrying a hand-like grip which encircles the drill rod. The inside of the grip has grooves or teeth cut around it, which take hold of the rod when the arm is pulled inward by the piston. The grip can be swung on or off the rod easily. Arms and grips are available to handle rods of the different standard sizes. With the Sullivan Rod Puller, a working stroke of 37 in. is available. The feet or rod pulled per minute or per hour, varies with drilling conditions and on the angle of the hole. The puller will handle up to 370 ft. of Sullivan "E" rods, or 330 ft. of "A" rods.

The rod puller may be mounted on the same support as the drill, or may be secured in any other convenient manner, as long as the axes of the drill rods and rod puller are parallel, so as to pull the rods in a straight line. It will usually be best to pull through the swivel head.

The puller is 55-in. long over all. It weighs 114 pounds net and the saddle 34 pounds additional net. Distance, rod puller piston to drill rod, centers, 12 in.

INGERSOLL-RAND Company, 11 Broadway, New York, has developed a new portable air compressor which represents the greatest advance in this class of equipment since it came into use more than 20 years ago. The new machine adapts the recognized advantages of two-stage stationary compressors and makes them usable in portable units for the first time.

Catalog 3064, which describes the new compressor, may be had at any office of Ingersoll-Rand Company.

ANNOUNCEMENT is made by C. K. King, president, Canadian Ohio Brass Company, Ltd., a subsidiary of the Ohio Brass Company, Mansfield, Ohio, of the sale of its manufacturing property on Portage Road, Niagara Falls, Ontario, Canada, to the Welland Securities, Ltd., who have purchased the land and buildings only as an addition to an adjoining Canadian residential estate.

"JACKBITS," announced by Ingersoll-Rand Company, 11 Broadway, New York, provide an economical solution of the drill-steel problem for small contractors, quarries, and public utility companies where the operation of a sharpener and blacksmith shop is not warranted, or where the handling of machine-sharpened drill steels is unusually difficult or expensive.

"Jackbits" are detachable rock-drill bits which replace the conventional bits forged on the ends of drill steels. They are secured directly onto the end of the drill rod by means of a sturdy, shallow, reverse buttress-type thread of a carefully determined angle. This distinctive thread keeps the bit tight while in use and makes it easily detachable for changing. The maximum hammer blow is transmitted through the end of the rod, close to the cutting edge, and there is no pressure on the threads.

A NEW BULLETIN (8 pages), fully illustrated, describes the single-stage Angle-type compressors furnished by Sullivan Machinery Company for low-pressure gas and air service. These units are driven by direct-connected electric motors, or Diesels, by belt or by steam engine.

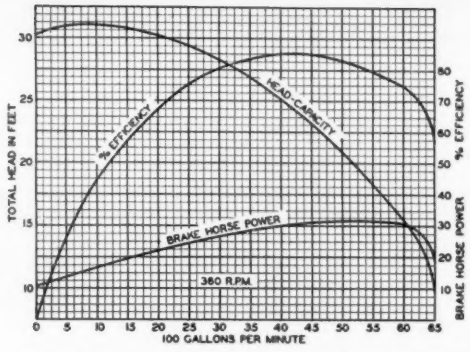
These units may be supplied in either the single (two-cylinder) or twin (four-cylinder) types. "Multi-step" control is recommended to secure the most economical operation at partial capacity load. Sullivan "sweep" control is recommended for low discharge pressures or where exceedingly close regulation is desired, either on intake or discharge.

Copies of the bulletin will be sent on application.

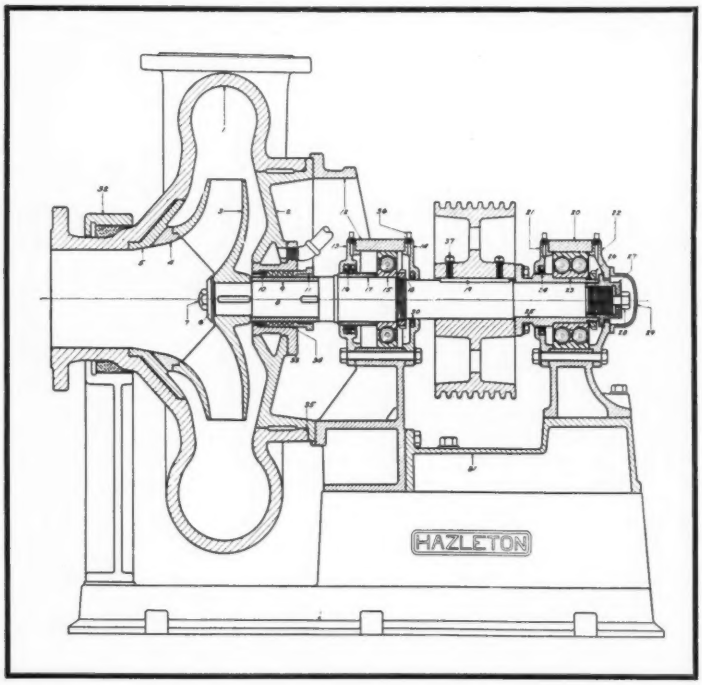
T. I. PHILLIPS has been appointed works manager of the East Pittsburgh works of the Westinghouse Electric and Manufacturing Company, according to a recent announcement by J. S. Tritle, vice president. Mr. Phillips, formerly works manager of the Nuttall plant of the company, in addition to new duties of factory management and operations, remains in charge of the Nuttall plant in a supervisory capacity.

ALL STANDARD LINES of General Electric synchronous motor control have been superseded by new lines incorporating new and important features. Included in this control equipment are relays for automatically applying and removing field excitation and for protecting the stator and amortisseur windings under all operating conditions.

HIGH EFFICIENCY
IS BUILT INTO
HAZLETON SLUDGE PUMPS



Characteristics of the pump shown in the accompanying drawing. Note the wide range of high efficiency—80% or better from 3,000 G. P. M. to 5,500 G. P. M.



HAZLETON PUMPING COSTS
are lower . . because:

A All Hazleton Pumps are designed not only for high initial efficiency but for high efficiency over a long period of continuous operation.

B Extra strength and wearing qualities are provided at all vital points.

C Modern acid-resisting alloys prolong the life of casings and impellers far beyond all previous standards.

D Provision is made in advance for effecting repairs and replacements, when eventually required with minimum trouble and expense.

E Hazleton Automatic Control Equipment practically eliminates need for attendance—often saving its entire cost in a few months.

F Hazleton Engineers have demonstrated outstanding capacity for constructive leadership in every phase of mine-pump design, construction and operation.

HAZLETON Sludge Pumps are being accepted as the logical pumps for coal cleaning service because their high initial efficiency is maintained throughout the life of the pump.

A simple adjustment compensates for wear on the casing ring and impeller ring so that, regardless of wear, the capacity is maintained.

Long life, too, is built into Hazleton Sludge Pumps. Whether your condition calls for a pump to withstand abrasion or corrosion, or both, our experience enables us to select an alloy especially suited to the conditions.

All parts are finished to gauges making replacements quick and easy.

BARRETT, HAENTJENS & CO.

PITTSBURGH, PA.
BIRMINGHAM, ALA.

HAZLETON, PA.

ST. LOUIS, MO.
HOUGHTON, MICH.

THAT PROPER SAFETY equipment may be definitely recognized in saving in cost of compensation insurance is shown by the action of supervising bodies in the states of California and Pennsylvania in issuing orders giving definite credit providing approved safety equipment is used. The California Inspection Rating Bureau, in its Mine Safety Organization and Credit Schedule, specifies that where protective shoes and protective hats of approved designs are worn by all underground workers and where goggles of approved design are worn by all men breaking rocks, drilling and blowing out holes, a 5 percent credit will be issued on all compensation insurance. The Pennsylvania Compensation Rating and Testing Bureau, in its Coal Mining Section, orders an 8-cent credit where approved protective hats are used, a 5-cent credit where approved goggles are used, and a 5-cent credit where approved safety shoes are used. These credits all apply against the cost of compensation insurance. According to E. W. Bullard, president, E. D. Bullard Co., the Hard Boiled Hat, Chippewa Safety Shoes and Willson Goggles, all distributed by this company, are all acceptable to the rating bureaus.

THE GARDNER-DENVER Company has issued a new 24-page General Products Bulletin, printed in two colors, illustrating their complete line of portable air compressors, rock drills, and accessories. Copies may be obtained by writing to the company at Quincy, Ill., or to any of its branch offices.

MR. F. C. EIBELL, who for the past four years has been manager of the advertising and publicity department of the Worthington Pump and Machinery Corporation, New York, N. Y., has resigned.

MINING EVENTS

(*Continued from page* 22)

panies that have already reported. The effect of these returns, when received, will probably be the raising of the rate for 1932 to close to the previous year's rate of 41.04.

Fluorspar Industry in 1932

TO SUPPLY the mineral industry promptly with data on fluorspar production and markets during the past year, the following information is furnished by the United States Bureau of Mines:

Low operations in the industries using fluorspar and liquidation of the large stocks accumulated by consumers are reflected in the shipments of only 25,251 short tons of fluorspar in 1932, the smallest since 1901. Keen competition for the small business offered, production in excess of requirements during the last few years, and low cost output of considerable fluorspar from shallow workings in Kentucky resulted in drastic reductions in the selling prices of domestic fluorspar. The selling price of metallurgical gravel fluorspar f. o. b. Illinois-Kentucky mines in 1932 declined $6 a ton, acid lump fluorspar $8 a ton, and ground fluorspar $12 a ton.

In 1932 the shipments of domestic fluorspar were 53 percent less than in 1931 and were 77 percent below the average for the 5-year period 1927-1931. Imports into the United States in 1932 were 36 percent less than in 1931 and were 74 percent below the average for the 5-year period 1927-1931. The average selling price of fluorspar sold by domestic producers to steel plants in 1932 was $2.03 a ton less than in 1931 and $3.89 a ton below the average for the preceding five years.

■ ■ ■

Scrap Iron Broken in Blasting Pits

ARMORED blasting pits for breaking scrap iron to furnace size have recently come into use in Europe. The development is described by Rudolf Feuchtinger in a recent issue of *The Explosives Engineer* magazine.

One of the large pits for this type of work is situated at a steel plant in Essen, Germany. Ingots, cast-iron pieces and iron waste from foundries are broken into convenient sizes by explosives. The blasting pit is 25 ft. long, 18 ft. wide, and 13 ft. deep. Its walls are lined with steel plates 1 ft. thick. Three large steel slabs, 1 ft. thick and weighing a total of 83 tons, cover the pit. The cover plates are equipped with valves for releasing the explosives gases.

In order to place the explosives charges in the large blocks of iron and steel, holes are burned into them by oxygen torches. The large pieces are then brought into the blasting pit by means of an electro-magnetic hoist and the dynamite loaded into the holes. After covering the pit with the heavy steel plates the charges are fired by an electric blasting machine.

The process avoids the precautions and great space necessary to blast large cast-iron steel pieces in the open, and has been found to be considerably more economical than hammering and other methods, says the writer of the article.

ASSOCIATION ACTIVITIES

(*Continued from page* 40)

"Business organizations have a major part to play in identifying the forces which prevent recovery and of advancing measures to correct them. The opportunity is given in the Chamber's annual meeting, which will bring together the representatives of chambers of commerce and trade associations of the country.

"In this preliminary program for the meeting an effort has been made to provide for the consideration of the immediate problems. These questions will be presented by outstanding speakers and will be made subject for general discussion by those attending the meeting.

"Out of the meeting will come recommendations representing the unified viewpoint of our business interests as to emergency and long range courses that should be taken."

Such important topics as The Task of Federal Government and The Task of Municipal and State Governments and Readjustments in Industry, problems of natural resource industries, The Federal Budget, Public Benefits from Anti-Trust Law Revisions, and many others are announced.

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DIAMOND CORE DRILLING

CONTRACTORS

We make Borings for Coal, Clays and all Minerals. Up-to-date Equipment. Gasolene, Steam and Electric Outfits. Ask us for estimates.

MOTT CORE DRILLING COMPANY

HUNTINGTON, W. VA.

We Look Into the Earth

By using Diamond Core Drills. We prospect Coal and Mineral Lands in any part of North or South America.

Pennsylvania Drilling Co.
Pittsburgh, Pa.

Drilling Contractors

COPPER KEEPS UPKEEP DOWN

in the Coal Mining Industry

Hine—From Ewing Galloway, N. Y.

The tipple and breaker shed of a big eastern Pennsylvania anthracite mine

● Maintenance of plants and mines is costly. Millions of dollars are spent annually for new equipment to replace that which has ceased its usefulness.

Many important savings are being made by coal mines in the use of copper and copper alloys for equipment where metals must resist corrosion. Copper and its alloys cannot rust and give satisfactory service for their manifold uses.

Brass and Bronze are the metals best suited for plates used for coal mine screens. They can and do withstand the corrosive effects of water as it is poured on coal.

Most coal mining companies provide homes for their employes. The cost of maintenance can be greatly reduced if Copper is used for roofings; Copper or Brass for water pipes; solid Bronze insect screens and solid Brass or Bronze hardware.

COPPER & BRASS
RESEARCH ASSOCIATION
25 Broadway, New York City

LEGISLATION

(*Continued from page* 24)

modities, and for other purposes. (S. 1466—McAdoo, referred to the Committee on Banking and Currency. A similar bill, H. R. 5159, was introduced in the House by Eagle and referred to the Committee on Banking and Currency.)

To authorize and require payment by the Treasury of the United States of the world price of gold for gold produced in the United States. (H. R. 5092—Englebright, referred to the Committee on Ways and Means.)

Federal Trade

To amend Section 5 of the act entitled, "An act to create a Federal Trade Commission, to define its powers and duties, and for other purposes," approved September 26, 1914 (35 Stat. L. 719; U. S. C., title 15, sec. 45). (S. 1390—Copeland, referred to the Committee on Interstate Commerce.)

Immigration

To amend the naturalization laws in respect to residence requirements, and for other purposes. (H. R. 4217 and H. R. 4219—Bloom, referred to the Committee on Immigration and Naturalization.)

To clarify the provisions of the immigration law relating to exclusion and deportation of certain aliens who have criminal records, and for other purposes. (H. R. 4223—Weideman, referred to the Committee on Immigration and Naturalization.)

To protect American labor, to reduce crime, to lessen the danger of foreign entanglements, and for other purposes. (H. R. 4555—Hoeppel, referred to the Committee on Immigration and Naturalization.)

To safeguard American labor and to help maintain our monetary credit. (H. R. 4556—Hoeppel, referred to the Committee on Immigration and Naturalization.)

To amend the law relating to the naturalization of children of naturalized citizens. (H. R. 4359—Millard, referred to the Committee on Immigration and Naturalization.)

To clarify the status of citizens who derived naturalization from parent or husband, and for other purposes. (H. R. 4368—Lansetta, referred to the Committee on Immigration and Naturalization.)

To amend the naturalization laws by conferring upon judges of state courts empowered to naturalize aliens the right to designate naturalization examiners to conduct preliminary hearings and to authorize said courts in their discretion to hold final hearings on petitions without the necessity for the attendance of the witnesses of the applicant. (H. R. 4739—Oliver of New York, referred to the Committee on Immigration and Naturalization.)

Labor

To prevent interstate commerce in certain commodities and articles produced or manufactured in industrial activities in which persons are employed more than five days per week or 6 hours per day. (H. R. 4557—Connery, referred to the Committee on Labor.)

To provide for the establishment of a national employment system and for cooperation with the states in the promotion of such a system, and for other purposes. (H. R. 4559—Peyser, referred to the Committee on Labor.)

To permit the importation of goods made by indentured labor only to the extent necessary to supply American demands which can not be met by American production, and for other purposes. (S. 1469—Lonergan, referred to the Committee on Finance.)

Joint resolution proposing an amendment to the Constitution of the United States conferring upon the Congress power to regulate the production and marketing of commodities and to prescribe minimum wages and maximum hours of labor during an emergency. (H. J. Res. 139—Kvale, referred to the Committee on the Judiciary.)

To establish an unemployment fund and provide for contributions thereto by employers and by the United States Government providing for the management of such fund and for the payment from moneys therein to certain unemployed persons during periods of unemployment, imposing additional duties and powers upon the Department of Labor, imposing duties upon employers, providing penalties, and making an appropriation. (H. R. 4887—Dunn, referred to the Committee on Labor.)

Joint resolution proposing to amend the Constitution of the United States to authorize the Congress to reduce the daily period of time for which contracts of employment may be lawfully made. (H. J. Res. 145—Crosser, referred to the Committee on the Judiciary.)

Mining Laws

To amend the United States mining laws applicable to the Mt. Hood National Forest within the State of Oregon. (S. 1506—Steiwer, referred to the Committee on Agriculture and Forestry.)

Taxation

To provide that the tax upon electrical energy shall be paid by the vendor. (S. 816——Bone, referred to the Committee on Finance. A similar bill, H. R. 4227, was introduced in the House by Sam B. Hill and referred to the Committee on Ways and Means.)

To amend the Revenue Act of 1932 to provide that a tax of 3 percent of the amount collected for electrical energy furnished to consumers to be paid by the person or corporation furnishing such electrical energy. (H. R. 4814—Condon, referred to the Committee on Ways and Means.)

To amend the Revenue Act of 1932 to provide for the imposition of the electrical-energy tax only on electrical energy actually furnished. (H. R. 4815—Condon, referred to the Committee on Ways and Means.

Transportation

To amend the Shipping Act, 1916, as amended, for the purpose of further regulating common carriers by water. (S. 1225—Johnson, referred to the Committee on Commerce. A similar bill introduced into the House—H. R. 4866, by Buck, was referred to the Committee on Merchant Marine, Radio and Fisheries.)

Joint resolution authorizing and directing the Interstate Commerce Commission and the United States Shipping Board to make a joint investigation into the practicability of equalizing rail rates and ocean rates on export- and import-freight traffic between points in the United States and points in foreign countries by way of the several United States ports, and to make joint reports thereon. (H. J. Res. 147—Edmonds, referred to the Committee on Interstate and Foreign Commerce.)

■ ■ ■

MODERN MINING PRACTICE

(*Continued from page* 39)

bility in the various flotation reagents that are in common use and in others that might be used.

2. Common practice in ordinary differential flotation of galena-chalcopyrite-sphalerite-pyrite can be explained by chemical data on the solubilities of metal xanthates.

3. A method for the separation of pentlandite-chalcopyrite-pyrrhotite flotation which had been outlined from purely chemical data was confirmed by subsequent flotation test work.

4. Failure to float gold with chalcopyrite in the ordinary practical separation is explained by the solubility of gold xanthate in cyanide.

5. A method for the separation of pyrite from gold-chalcopyrite was outlined from chemical data and confirmed by subsequent flotation test work.

6. Chemical data indicated that pentlandite could be floated ahead of chalcopyrite or, alternatively, that chalcopyrite could be floated ahead of pentlandite. This was confirmed by flotation test work.

7. The minerals of ores that have been exposed to the influence of oxidation or secondary precipitation do not respond to the treatment outlined as well as do clean unaltered minerals.

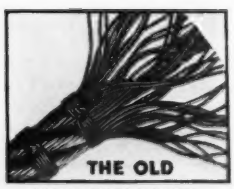
ROBINSON
VENTILATING COMPANY
•
Fans and Blowers
Ventilating Engineering Service
•
ZELIENOPLE
PENNSYLVANIA

We like 'em

"HARD BOILED"

. . . if they ask us to *prove* that TRU-LAY Preformed Wire Rope will save them money. We welcome such an inquiry from a man who knows what he wants . . . and wants to be shown. That's the way our best customers have been hatched, because shrewd and careful buyers are alive to possible savings in wire rope.

We expect you to be "hard-boiled" in the matter. Because we know if you convince yourself that TRU-LAY gives much better and longer service, we will add another customer to our long list of TRU-LAY users.



NON-PREFORMED

PREFORMED

"I-T" (internal tension) in wire rope is eliminated by preforming strands and wires to their exact helical shapes . . . so they lie in place *relaxed*. As a result, TRU-LAY Preformed Wire Rope gives much longer service and greater efficiency.

TRU-LAY combats fatigue, is easier and safer to handle, resists kinking and high-stranding. Each strand carries an equal load.

The sum of these and other advantages results in worth while wire rope savings.

Tell us your wire rope usage and service. Our experience over a long period of years, in hundreds of instances and applications will prove in good stead . . . to lower *your* wire rope costs, just as we have lowered wire rope costs for others.

Try TRU-LAY Preformed Wire Rope. An ounce of experience is worth a ton of advice.

Address the AMERICAN CABLE COMPANY, *Inc.*
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ADVERTISING INDEX

Allis-Chalmers Mfg. Co.	Inside Front Cover
American Cable Co.	48
Barrett-Haentjens & Co.	44
Blaw Knox Mfg. Co.	10
Copper & Brass Research Assn.	46
Ensign-Bickford Co., The	4
General Electric Co.	Inside Back Cover
Goodman Mfg. Co.	11
Grasselli Chemical Co.	Back Cover
Hercules Powder Co.	50
Hoffman Bros. Drilling Co.	49
Joy Bros., Inc.	14
Mine Safety Appliances Co.	12-13
Mott Core Drilling Co.	45
National Carbon Co.	9
Ohio Brass Co.	8
Pennsylvania Drilling Co.	45
Roberts & Schaefer Co.	3
Robinson Ventilating Co.	47
Roebling's Sons Co., John A.	5
Sprague & Henwood	49
Universal Vibrating Screen Co.	45
Westinghouse Elec. & Mfg. Co.	6-7

10th ANNUAL COAL CONVENTION & EXPOSITION

(*Continued from page* 35)

miners' goggles, hard-boiled hats and caps, respirators, first aid equipment, gas masks, inhalator, and mine signs.

SAFETY MINING COMPANY.—No description available.

SANFORD DAY IRON WORKS, INC., exhibit will consist of working models of various types of mine cars and car wheels. There will be some new types of cars on display.

SPRAGUE & HENWOOD, INC., will display four separate types of Diamond Drill Machines, ranging in size from the "Little Giant" drill weighing approximately 85 lbs., and having a capacity of drilling to a depth of 100 ft., to the type B-2 Diamond Drill machine, weighing 3,700 lbs., and having a capacity of drilling to a depth of 3,200 ft. They will also exhibit diamond bits, sample corebarrels, sample testers, and specimens of core which have been recovered in some drilling operations.

STANDARD OIL COMPANY.—No description available.

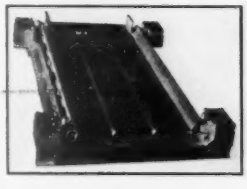
SULLIVAN MACHINERY COMPANY exhibit in space No. 118 will show photos of some of recent types of coal mining equipment, including coal cutters, drills, compressors, scraper loading outfits, etc. They will also have some of the newer items of parts and devices used in connection with coal cutters on display.

SUN OIL COMPANY.—No description available.

TIMKEN ROLLER BEARING COMPANY will exhibit a full line of Timken Bearings as used in mine cars, locomotives, pumps, conveyors and other mining equipment. The display will also include an axle of a mine car with the bearing boxes cut away to show the operation of the bearing and its mounting. This axle will be similar to the Timken installations now in service in approximately two hundred thousand mine cars operated in all parts of the country.

BERTRAND P. TRACY COMPANY, Booth No. 605, located immediately to the right of entrance to Hall 2, will show specimen products representative of this company's extensive line of machine and locomotive repair parts; also the Cincinnati Cutter Chain.

TREESDALE LABORATORIES, INC.—No description available.



THE W. S. TYLER COMPANY will show the new type 400 VIBRATOR Screen. This screen is the new type with four electric vibrators and is designed to provide intensive active vibration over the entire screen area.

TYSON ROLLER BEARING COMPANY.—No description available.

THE UNIVERSAL LUBRICATING COMPANY will have their exhibit made up as a reception room and show small samples of their various products.

VACUUM OIL COMPANY.—No description available.

WESTERN CARTRIDGE COMPANY.—No description available.

WEST VIRGINIA RAIL COMPANY will show samples of all the rails that they roll, as well as the splice and angle bar sections that they roll to fit these rails. Complete made up joints will also be shown of the new splice-angle bar joint which has been recently developed to permit the use of short bonds for mine track work.

Also included will be a display of their complete line of steel ties and switch stands.

WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY booth has been designed to illustrate electrical developments of the past year especially applicable to the coal mining industry and the latest developments in mine equipment and applications will be displayed. There will be a cross section model of a mine showing a photo-electric control for opening and closing a mine door upon the approach and departure of a train, a cutaway model of a surge-proof transformer, a 5 hp. De-ion circuit breaker on repeated overload tests, a demonstration of thermoguard motor protection from overheating, a disassembled squirrel cage motor showing the prewound core, gear motors, controllers, and renewal parts.

O. C. Hoffman, Pres. Established 1902 L. H. Hoffman, Treas.

HOFFMAN-BROS-DRILLING-CO.

—CONTRACTORS—

DIAMOND CORE DRILLING

PUNXSUTAWNEY, PA.

Our specialty—Testing bituminous coal lands
Satisfactory cores guaranteed

Reliable Contractors
DIAMOND CORE DRILLING
Maximum Core Recovery Assured
By Use of Double Tube Corebarrels
Satisfaction Guaranteed
SPRAGUE and HENWOOD, INC.,
New York, N. Y. Scranton, Pa., U. S. A. Pittsburgh, Pa.

Properly Blasted Material—Not Pounds of Explosives

THAT'S WHAT COUNTS!

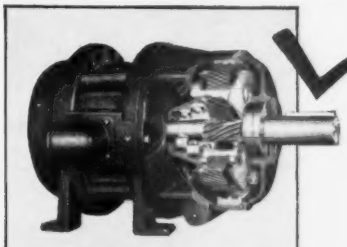
When you buy from Hercules, you not only get a complete range of the most effective and money-saving explosives made, but also a trained organization is ready to help you to select the best ones for your work—and show you how to get the most out of them. That's the way to buy explosives. Investigate. Find out how others have saved hundreds of thousands of dollars by thinking of properly blasted material—not pounds of explosives.

HERCULES POWDER COMPANY
INCORPORATED
WILMINGTON DELAWARE

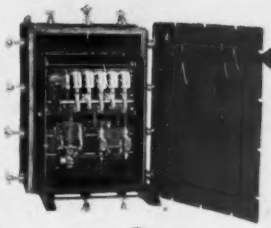
A-21

Check

these G-E Money-Saving Equipments



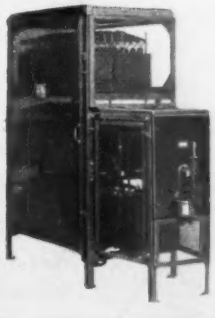
GEAR-MOTOR—A G-E motor with a built-in speed reducer combined into a compact, efficient, economical unit ready for direct connection to your machines. It will provide the desired speed at the output shaft. These units are available for use on any standard a-c. or d-c. power supply. Wherever you need a dependable low-speed drive that is low in maintenance and high in efficiency, specify G-E Gear-motors.



CONTROL—If you are using manually operated starters, you will find it profitable to investigate the complete line of G-E automatic controls. They're strong, dependable, and long-lived. Their contactors have been tested for thousands of operations. Their thermal over-load relays provide positive protection for your motors.

THRUSTORS—Self-contained, motor-driven devices that exert a smooth, powerful, straight-line thrust and a quick, cushioned return. Wherever you now use hand- or foot-operated pedals or levers, or hydraulic cylinders or solenoids, consider the application of Thrustors. They'll do the job simply and easily with increased efficiency. They'll save you time and money as well as providing greater safety for your workmen.

CABLE—You can save money on cable if you'll specify G-E tellurium-compounded mining cable. Its jacket is tough—tough as the tread on an automobile tire. It has passed all of the drastic tests of the U. S. Bureau of Mines. Its life is long; it will outwear any ordinary rubber-covered cable that you can buy. Hit it with picks or shovels, run over it with loaded cars; this G-E mining cable will stand the gaff of the severest service.



CAPACITORS—If you have a power-factor penalty clause in your power contract, it will pay you to check up on your power-factor. If it's low, you can improve it simply and easily by connecting a G-E capacitor to your power lines. A Southeastern mine installed a 90-kv-a. capacitor and saved $950 annually on power costs alone. Perhaps you can save even more. Consider also, G-E synchronous motors and condensers for power-factor improvement.

If you would like additional information on any of these G-E money-saving equipments, address your nearest G-E office or General Electric Company, Schenectady, New York

200-684

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The Zinc Chloride treatment adds but little to the cost of untreated timbers, yet it prolongs their life many times. It eliminates many costly replacements due to rot and insects, thus reducing labor and material charges and keeping maintenance expense at a minimum.

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Zinc Chloride treated timbers are *rot-proof, termite-resistant, odorless,* and *fire-retarding.* Commercial pressure-treating plants are located conveniently near you. Write for booklet.

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